# A SIMPLIFIED PROCEDURE FOR FORECASTING DEMAND FOR MINERAL AGGREGATE IN ONTARIO

E.E. MATTEN M.A., C.I.M.

Industrial Minerals Section

Industrial Mineral Background Paper No. 4

Ontario

Ministry of Natural Resources

Hon. Alan W. Pope
Minister

W.T. Foster
Deputy Minister

# INDUSTRIAL MINERAL BACKGROUND PAPER NO. 4

Parts of this publication may be quoted if credit is given to the Ontario Ministry of Natural Resources, Mineral Resources Branch. It is recommended that reference to this report be made in the following form:

Matten, E.E.
1982: A Simplified Procedure for Forecasting Demand for Mineral Aggregate in Ontario; Ontario Ministry of Natural Resources, Mineral Resources Branch, Industrial Mineral Background Paper 4 (IMBP 4), 160 pp.

*NOTE*:

This background discussion paper does not represent official policy and the views expressed herein are not necessarily the viewpoint of the Government of Ontario.

March 1982
Price: $5.00

ISSN 0228-7811
ISBN 0-7743-7268-0

# TABLE OF CONTENTS


| ITEM | PAGE |
|---|---|
| PREFACE | 1 |
| ACKNOWLEDGMENTS | 2 |
| EXECUTIVE SUMMARY | 3 |
| INTRODUCTION | 8 |
| DEMAND FORECASTING | 16 |
| Construction Expenditures in Ontario 1950-1978 | 22 |
| Value of Construction by type in Ontario, 1971-1978 | 23 |
| Construction Expenditure in Ontario as % of Gross Provincial Product, Retail Sales and Disposable Income, 1971-1978 | 25 |
| Value of Building Permits and Construction Value in Ontario, 1971-1978, | 26 |
| Demand for Mineral Aggregate in Ontario by Economic Regions, 1978-1981, | |
| SUMMARY OF FORECASTS | 27 |
| CENTRAL ONTARIO ECONOMIC REGION | 29 |
| Construction Expenditure Forecast, 1978-1981 | 31 |
| Construction Expenditure by Construction Type, 1978-1981 | 33 |
| Statistical Projection of Demand for Aggregate, 1978-1981 | 34 |
| Forecasting the Demand in Region/Municipalities/Counties | 36 |
| Demand Forecast for Mineral Aggregate in Regional Municipalities/Counties, 1978-1981 | 37 |
| Forecast Control | 41 |
| SOUTHWESTERN ONTARIO ECONOMIC REGION | 44 |
| Construction Expenditure Forecast, 1978-1981 | 46 |
| Construction Expenditure by Construction Type, 1978-1981 | 48 |
| Demand for Mineral Aggregate in Southwestern Ontario, 1978-1981 | 50 |
| Demand for Mineral Aggregate in Counties, 1978-1981 | 52 |
| Forecast Control | 55 |
| EASTERN ONTARIO ECONOMIC REGION | 59 |
| Construction Expenditure Forecast, 1978-1981 | 61 |
| Construction Expenditures by Construction Type, 1978-1981 | 63 |
| Demand for Mineral Aggregate in Eastern Ontario, 1978-1981 | 65 |
| Demand Forecast for Aggregates in Regional Municipalities and Counties, 1978-1981 | 67 |
| Forecast Control | 69 |
| NORTHEASTERN ONTARIO ECONOMIC REGION | 72 |
| Construction Expenditure Forecast, 1978-1981 | 76 |
| Construction Expenditures by Construction Type, 1978-1981 | 78 |
| Demand for Mineral Aggregates in Northeastern Ontario, 1978-1981 | 81 |
| Demand for Mineral Aggregate in Northeastern Ontario by Districts, 1978-1981 | 83 |
| Forecast Control | 85 |

NORTHWESTERN ONTARIO ECONOMIC REGION ..... 88
Construction Expenditure Forecast, 1978-1981 ..... 89
Construction Expenditure by Construction Type, 1978-1981 ..... 92
Demand for Mineral Aggregate in Northwestern Ontario, 1978-1981 ..... 95
Demand for Mineral Aggregate in Districts, 1978-1981 ..... 97
Forecast Control ..... 99

APPENDIX I (Central Ontario Economic Region) ..... 103
TABLE I/1 — Retail Sales in Central Ontario, 1971-1977 ..... 104
TABLE I/2 — Retail Sales/Capita, 1971-1977 ..... 105
TABLE I/3 — Disposable Income in Central Ontario, 1971-1977 ..... 106
TABLE I/4 — Disposable Income/Capita, 1971-1977 ..... 107
TABLE I/5 — Market Rating Index — Regional Municipalities and Counties in Central Ontario, 1971-1977 ..... 108
TABLE I/6 — Income Rating Index, 1971-1977 ..... 109
TABLE I/7 — Market Attraction Index, 1971-1977 ..... 110
TABLE I/8 — Building Permits in Regional Municipalities and Counties of Central Ontario, 1971-1977 ..... 111
TABLE I/9 — Building Permits for Non-Residential Building Construction in Regional Municipalities/Counties, 1971-1980 ..... 118
TABLE I/10 — Shipments of Aggregates, 1976-1977 ..... 123
TABLE I/11 — Population in Central Ontario, 1971-1981 ..... 124
APPENDIX II (Southwestern Ontario Economic Region) ..... 125
TABLE II/1 — Retail Sales in Southwestern Ontario, 1971-1981 ..... 126
TABLE II/2 — Retail Sales/Capita in Southwestern Ontario, 1971-1981 .... 127
TABLE II/3 — Disposable Income in Southwestern Ontario, 1971-1981 .... 128
TABLE II/4 — Disposable Income/Capita in Southwestern Ontario, 1971-1981 ..... 129
TABLE II/5 — Building Permits in Southwestern Ontario, 1971-1980 ..... 130
TABLE II/6 — Population in Southwestern Ontario, 1971-1981 ..... 141
TABLE II/7 — Estimated Total Output of Aggregate, 1976-1979 ..... 142
APPENDIX III (Eastern Ontario Economic Region) ..... 143
TABLE III/1 — Population of Eastern Ontario, 1971-1981 ..... 144
TABLE III/2 — Retail Sales in Eastern Ontario, 1971-1981 ..... 145
TABLE III/3 — Disposable Income in Eastern Ontario, 1971-1981 ..... 146
TABLE III/4 — Retail Sales/Capita in Eastern Ontario, 1971-1981 ..... 147
TABLE III/5 — Disposable Income/Capita in Eastern Ontario, 1971-1981 ... 148
TABLE III/6 — Building Permits in Eastern Ontario, 1971-1979 ..... 149
TABLE III/7 — Production of Aggregates in Eastern Ontario, 1976-1978 .... 158
APPENDIX IV (Northeastern Ontario Economic Region) ..... 159
TABLE IV/1 — Population in Northeastern Ontario, 1978-1981 ..... 160
TABLE IV/2 — Retail Sales and Disposable Income in Northeastern Ontario, 1976-1977 ..... 161
TABLE IV/3 — Average Annual Use of Aggregates for Flux and Mine Fill in Northeastern Ontario, 1978-1981 ..... 162
TABLE IV/4 — Building Permits in Northeastern Ontario, 1971-1979 ..... 163
TABLE IV/5 — Production of Aggregates in Northeastern Ontario, 1976-1978 172
APPENDIX V (Northwestern Ontario Economic Region) ..... 173
TABLE V/1 — Population in Northwestern Ontario, 1971-1978 ..... 174
TABLE V/2 — Retail Sales in Northwestern Ontario, 1971-1979 ..... 174

TABLE V/3 — Disposable Income in Northwestern Ontario, 1971-1979 .... 175
TABLE V/4 — Retail Sales/Capita in Northwestern Ontario, 1971-1979 .... 175
TABLE V/5 — Disposable Income/Capita in Northwestern Ontario, 1971-1979 ..... 176
TABLE V/6 — Building Permits in Northwestern Ontario, 1971-1981 ..... 176
TABLE V/7 — Production of Aggregates in Northwestern Ontario, 1976-1978 ..... 182
Bibliography ..... 183

## NORTHERN ONTARIO ECONOMIC REGIONS

BOUNDARIES

— International — County or District

— Provincial ▬ Regional

RM Regional Municipality

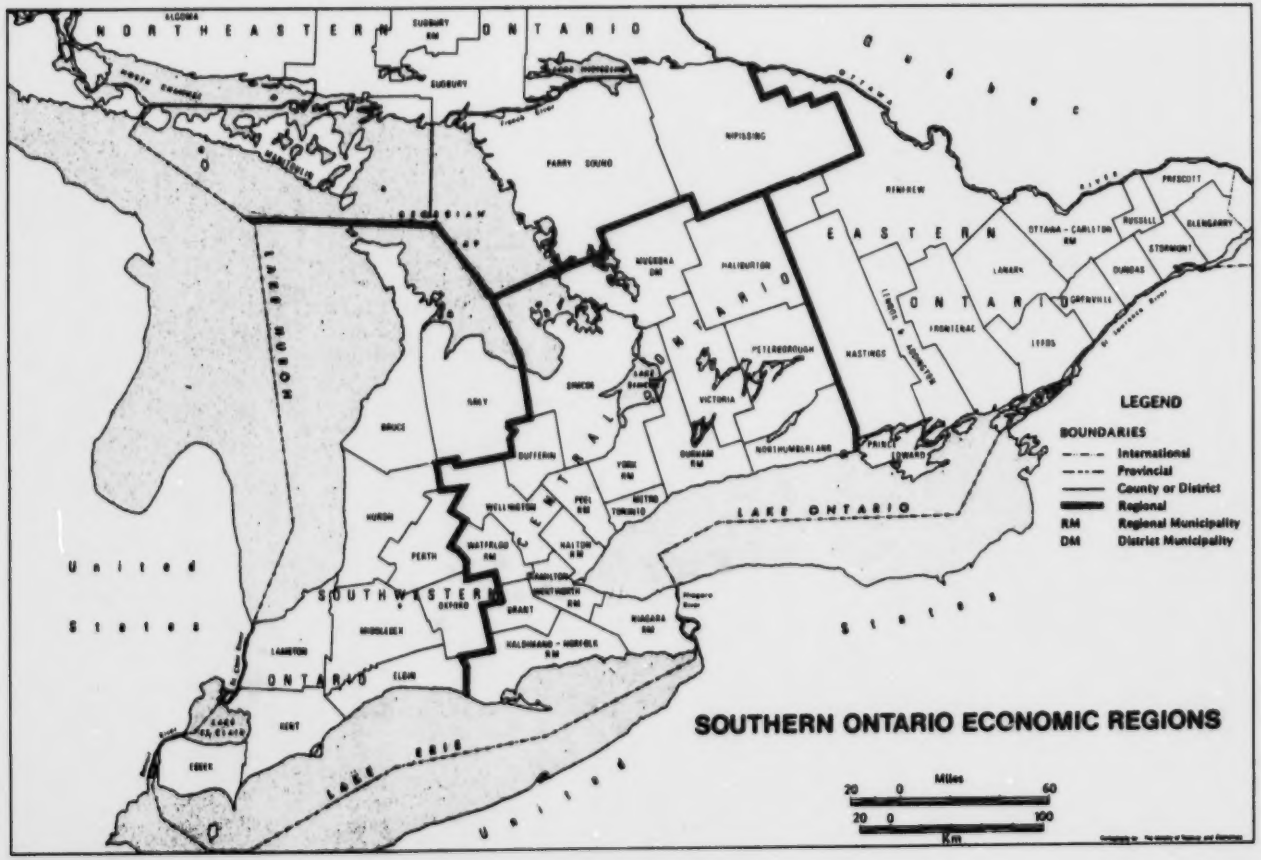
Miles

20 0 20 60 100 140

50 0 100 250

Km

Cartography by The Ministry of Treasury and Economics


NORTHEASTERN ONTARIO
SUDBURY
PARRY SOUND
NIPISSING
RENFREW
EASTERN ONTARIO
OTTAWA - CARLETON RM
PRESCOTT
RUSSELL
GLENGARRY
STORMONT
DUNDAS
LANARK
GRENVILLE
LEEDS
FRONTENAC
LENNOX & ADDINGTON
HASTINGS
PRINCE EDWARD
PETERBOROUGH
VICTORIA
NORTHUMBERLAND
DURHAM RM
HALIBURTON
MUSKOKA DM
SIMCOE
GREY
BRUCE
DUFFERIN
YORK RM
METRO TORONTO
PEEL RM
HALTON RM
HAMILTON-WENTWORTH RM
WATERLOO RM
WELLINGTON
HURON
PERTH
OXFORD
BRANT
NIAGARA RM
HALDIMAND - NORFOLK RM
SOUTHWESTERN ONTARIO
MIDDLESEX
LAMBTON
KENT
ESSEX
ELGIN
LAKE HURON
LAKE ONTARIO
LAKE ERIE
United States
LEGEND
BOUNDARIES
International
Provincial
County or District
Regional
RM Regional Municipality
DM District Municipality
SOUTHERN ONTARIO ECONOMIC REGIONS
Miles
20 0 60
Km
20 0 100

HUDSON BAY
JAMES BAY
MANITOBA
MINNESOTA
LAKE SUPERIOR
QUEBEC
LAKE HURON
LAKE ONTARIO
LAKE ERIE
REGIONS
REGIONAL HEADQUARTERS
1 Northwestern . . . . . Kenora
2 North Central . . . . Thunder Bay
3 Northern . . . . . Cochrane
4 Northeastern . . . Sault Ste. Marie
5 Algonquin . . . . . Huntsville
6 Eastern . . . . . Kemptville
7 Central . . . . . Richmond Hill
8 Southwestern . . . . . London
ADMINISTRATIVE REGIONS
AND DISTRICTS
LEGEND
REGIONAL HEADQUARTERS
DISTRICT HEADQUARTERS
Districts are named according to where district headquarters are located except for:
Algonquin – Whitney
Kirkland Lake - Sesekika
Carleton Place – Lanark
Nipissing – Midhurst
Niagara – Fonthill
Ontario
Ministry of Natural Resources

# PREFACE

The Report of the Ontario Mineral Aggregate Working Party recommended review of aggregate demand which was to be conducted no later than three years upon the completion of the Report in 1977. In view of the unreliability of the existing data, the Working Party recognized that much more confidence in our ability to forecast demand would be required before long range provincial need could be firmly established, and conditions to meet those needs fully described.

Because of these uncertainties, as a matter of urgency, the Working Party reccommended:

> "That a general review of forecasting techniques be undertaken in order to develop more reliable estimates of the future provincial demand for mineral aggregates."
>
> "That the Ministry of Natural Resources should collect and publish on an annual basis, accurate statistics on production of aggregates in Ontario."

The Working Party also concluded that the following problems and solutions be generally acknowledged:

1. Local involvement is essential in the planning and approval process if concerns are to be effectively stated and considered.
2. Without proper planning, there is no way to protect resources for the future.

Hard data on consumption of aggregates and on expenditures on construction in Ontario Economic Regions and their component regional municipalities and counties were not available from published or unpublished data sources. It was necessary, therefore, to use the available aggregates data sources for statistical interpolations at a sub-provincial level, and to apply statistical tests to estimated data on the basis of the data that might be made available from regional municipalities and counties. This requirement necessitated extensive consultations and data collection for analysis and interpretation from 9 regional municipalities including Metropolitan Toronto.

Accordingly, Mr. E. E. Matten, Mineral Economist and Policy Analyst in the Industrial Minerals Section of the Mineral Resources Branch, started an in-house study of the demand for mineral aggregate. This three-year study was conducted in cooperation with the Ministry of Transportation and Communications which developed new input factors for road construction in Southern Ontario and assisted in a micro-study of the short-term demand for mineral aggregate for the roads system in the Central Ontario Economic Region.

This study attempted to develop a simplified procedure of forecasting the demand for mineral aggregate at the Economic Region level and then distributed the Regional demand forecast to its constituent Regional Municipalities, Counties and Districts.

A considerable volume of socio-economic statistics from many sources is reproduced and correlated in this study to form the basic data source for studies of demand for mineral aggregates in various administrative jurisdictions. I hope this report will be useful to municipalities, the aggregate industry, the Ministry staff, and other government bodies in their work. In particular that the data herein contained will be found useful and contribute to more accurate and realistic planning in Ontario.

G. A. Jewett
Executive Coordinator
Mineral Resources Group

## ACKNOWLEDGEMENTS

Regional Municipalities of the Central Ontario Region, especially Metro Toronto, the Regional Municipality of Hamilton-Wentworth and the Regional Municipality of Niagara, prepared extensive compilations of historical data on construction activity in their respective areas which is gratefully acknowledged.

The Ministry of Transportation and Communications has prepared forecasts on road construction and maintenance expenditures in the study area and developed input factors for municipal road construction in the selected, statistically significant areas, incorporating urban and rural municipalities, cities and towns. Moreover, the Ministry of Transportation and Communications has produced input factors for construction of provincial roads in each Regional Municipality/County in the Central Ontario Economic Region.

Also, mineral aggregate studies prepared by consultants for the Ministry of Natural Resources for Central Ontario, Southwestern Ontario, Part of Eastern Ontario, Sudbury area and Thunder Bay area have been a source of valuable information.

Support and advice was given by Ms. Sherry Yundt, Supervisor of the Industrial Minerals Section in the Ministry of Natural Resources. Mr. John Masham ably assisted in the preparation of the Introductory Chapter and Mrs. Shu-TwanLin co-operated in basic statistical research in the early part of the study. The Experience 1980 and 1981 students, Miss Dorothy Au-Yeung and Miss Nancy Green prepared voluminous statistical material for analysis which is deeply appreciated.

Last but not least the marketing data obtained from the Financial Post Survey of Markets and from Sales, Marketing Management Survey of Buying Power, construction statistics obtained from Statistics Canada publication, Catalog no. 64-201, Ontario population projections and historical series of building permits data prepared by Ontario Central Statistical Services have made substantial contribution to the successful completion of this task.

# EXECUTIVE SUMMARY

The principal objective of the study of demand for mineral aggregate in the regional municipalities/counties and Economic Regions of Ontario was to develop an uncomplicated model for forecasting the short-term demand at these levels.

The developed and tested model uses the Gross Provincial Product per capita which after an adjustment by market and income rating indexes, that measure the pull of Economic Regions markets, indicates the gross income per capita in the Regions. This gross income per capita multiplied by the number of residents in a Region produces its Gross Regional Product.

A calculated ratio of construction expenditure in Ontario to Gross Provincial Product is applied to Gross Regional Product and modified by an average Market Attraction Index, developed for each Region, to yield the total construction expenditure in the Region.

The construction expenditure is, subsequently, broken down by the four types of construction through the application of an average 1971-1978 share of each type in Ontario's total (Scenario A) and alternatively by extending the 1971-1978 trend (Scenario B) to forecast the 1971-1981 construction expenditure alternatives in the Regions. Subsequently, the regional construction expenditures by type multiplied by the input factors developed separately for Southern Ontario and for Northern Ontario delineate the demand for aggregate for each Region and Ontario as a whole.

In this study an input factor is a fraction of a metric tonne of mineral aggregate per one dollar of construction expenditure deflated by the Gross National Expenditure Implicit Price Index to a 1971-constant dollar. In Scenario A it is assumed that the construction activity by type in Ontario Regions during the years 1978 to 1981 will be approximately the same as the average proportion in the Province during the 1971-1978 period.

In Scenario B it is assumed that the construction by type in Ontario Regions during the 1978-1981 period will follow the Ontario trend of the 1971-1978 period.

In forecasting a short-term demand for mineral aggregate in Regional Municipalities and counties the underlying assumption is the validity of the average and the trend ratios of building permits in Regional Municipalities/Counties to total building permits in the respective regions.

The total demand for aggregate in Ontario is distributed to Regional Municipalities and Counties in the following manner:

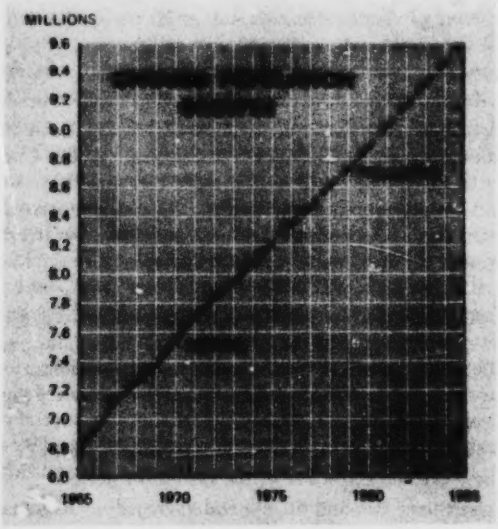
a) Residential and Non-Residential Building demand is allocated on the basis of building permit ratios for each of these two types of construction.

b) Assuming that Non-Road Engineering Construction is directly related to the total Building Construction, the sub-regional allocations are made on the basis of distribution of the total permits for Building Construction in the Region.

c) The demand for mineral aggregate for Road Engineering Construction in each Regional Municipality and County is forecast on the basis of analyses of individual contracts for road building in these jurisdictions, capital budget forecast for provincial and municipal road building (assisted by the Province) and on municipal/Ministry of Transportation and Communications estimates for unassisted road building in the municipalities of Central Ontario Economic Region. Road construction value in the remaining four economic Regions was estimated as a percentage of the projected construction expenditures.

Whenever a time constraint and/or scarcity of resources would not allow the undertaking of a micro-study, it is suggested that the statistical method be used. It is interesting to note that the cumulative demand for the Central Ontario Economic Region in the 1978-81 period established on the basis of the micro-study of road construction, totals 269.1 million tonnes and the demand based exclusively on statistical interpolation totals 256.1 million tonnes - a total difference of about 5 percent.

It must be admitted however, that the forecasts developed by a distributive model for regional municipalities/counties might be adversely affected by unforseen change in Ministry of Transportation and Communications policy with respect to its road building program. It is advisable therefore, to consult the Ministry of Transportation and Communications concerning the major road building programmes planned for areas under study and make suitable adjustments to the demand forecast.




**Population growth in Ontario**

## DEMAND FOR MINERAL AGGREGATE, IN ONTARIO IN 1971-1981

(Thousands of Tonnes)

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1971-1981 Cumulative |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HIGH:** | | | | | | | | | | | | |
| Ontario — Total Demand | 111,410 | 113,095 | 122,183 | 120,148 | 124,326 | 112,482 | 115,756 | 117,222 | 119,328 | 119,350 | 122,778 | 1,298,078 |
| Central Ontario Economic Region — Total Demand | 64,395 | 65,369 | 70,622 | 69,445 | 71,860 | 65,015 | 66,907 | 66,866 | 69,847 | 69,464 | 72,339 | 752,129 |
| Southwestern Ontario Economic Region — Total Demand | 14,929 | 15,268 | 16,373 | 16,220 | 16,660 | 15,185 | 15,511 | 16,158 | 15,831 | 15,907 | 16,103 | 174,145 |
| Eastern Ontario Economic Region — Total Demand | 13,258 | 13,458 | 14,540 | 14,298 | 14,795 | 13,385 | 13,775 | 14,544 | 13,860 | 14,073 | 14,238 | 154,224 |
| Northeastern Ontario Economic Region — Total Demand | 14,037 | 14,250 | 15,395 | 15,139 | 15,665 | 14,173 | 14,585 | 14,962 | 15,025 | 15,082 | 15,201 | 163,514 |
| Northwestern Ontario Economic Region — Total Demand | 4,791 | 4,750 | 5,253 | 5,046 | 5,346 | 4,724 | 4,978 | 4,692 | 4,765 | 4,824 | 4,897 | 54,066 |
| **LOW:** | | | | | | | | | | | | |
| Ontario — Total Demand | 97,483 | 98,958 | 106,910 | 105,130 | 108,785 | 98,421 | 101,286 | 106,439 | 106,484 | 105,563 | 108,632 | 1,144,091 |
| Central Ontario Economic Region — Total Demand | 58,295 | 59,177 | 63,932 | 62,867 | 65,053 | 58,856 | 60,569 | 62,358 | 65,150 | 64,687 | 67,480 | 688,424 |
| Southwestern Ontario Economic Region — Total Demand | 13,550 | 13,755 | 14,860 | 14,613 | 15,121 | 13,681 | 14,079 | 15,352 | 14,287 | 14,143 | 14,268 | 157,709 |
| Eastern Ontario Economic Region — Total Demand | 10,820 | 10,984 | 11,867 | 11,669 | 12,075 | 10,925 | 11,243 | 12,968 | 11,444 | 11,185 | 11,027 | 126,207 |
| Northeastern Ontario Economic Region — Total Demand | 10,919 | 11,084 | 11,975 | 11,776 | 12,185 | 11,022 | 11,344 | 11,634 | 11,479 | 11,469 | 11,763 | 126,650 |
| Northwestern Ontario Economic Region — Total Demand | 3,899 | 3,958 | 4,276 | 4,205 | 4,351 | 3,937 | 4,051 | 4,127 | 4,124 | 4,079 | 4,094 | 45,101 |

## MEDIUM AND LONG-TERM PROJECTED DEMAND FOR MINERAL AGGREGATE ONTARIO AND ECONOMIC REGIONS 1981-2000

(Thousands of Tonnes)

| HIGH: | 1981 | 1985 | 1990 | 1981-1990 Cumulative | 1995 | 2000 | 1981-2000 Cumulative |
|---|---|---|---|---|---|---|---|
| Ontario — Total Demand | 122,778 | 126,312 | 131,064 | 1,268,229 | 138,718 | 146,829 | 2,664,064 |
| Central Ontario Economic Region — Total Demand | 72,339 | 75,436 | 79,494 | 758,665 | 83,771 | 88,277 | 1,601,153 |
| Southwestern Ontario Economic Region — Total Demand | 16,103 | 16,284 | 16,535 | 163,107 | 17,621 | 18,778 | 340,557 |
| Eastern Ontario Economic Region — Total Demand | 14,238 | 14,412 | 14,630 | 144,339 | 15,591 | 16,614 | 301,344 |
| Northeastern Ontario Economic Region — Total Demand | 15,201 | 15,405 | 15,705 | 154,386 | 16,885 | 18,155 | 324,615 |
| Northwestern Ontario Economic Region — Total Demand | 4,897 | 4,775 | 4,700 | 47,732 | 4,850 | 5,005 | 96,395 |
| **LOW:** | | | | | | | |
| Ontario — Total Demand | 108,632 | 112,602 | 116,837 | 1,129,762 | 122,805 | 129,099 | 2,364,501 |
| Central Ontario Economic Region — Total Demand | 67,480 | 70,369 | 74,154 | 707,674 | 78,144 | 82,347 | 1,493,371 |
| Southwestern Ontario Economic Region — Total Demand | 14,268 | 14,653 | 14,828 | 146,457 | 15,507 | 16,218 | 302,278 |
| Eastern Ontario Economic Region — Total Demand | 11,027 | 11,664 | 11,771 | 116,198 | 11,984 | 12,202 | 236,263 |
| Northeastern Ontario Economic Region — Total Demand | 11,763 | 11,771 | 11,914 | 117,960 | 12,809 | 13,772 | 247,096 |
| Northwestern Ontario Economic Region — Total Demand | 4,094 | 4,145 | 4,170 | 41,443 | 4,361 | 4,560 | 85,263 |

**Assumption:** Average annual growth rate of the 1971-1981 period of 1.0535 in Ontario to continue.

**NOTE:** Demand forecasts for individual regional municipalities, counties and territorial districts will be provided under separate cover to respective jurisdictions.

The estimated demand for mineral aggregate in the 1971-1981 period, in a high-low range of integrated "A" and "B" Scenarios, produces a useful data series for projections of the demand in each Economic Region and in the Province.

This high estimate, based on actual construction statistics for the 1971-1978 period, indicates that the demand for mineral aggregates in Ontario increased from 111,410,000 tonnes in 1971 to 122,778,000 tonnes in 1981 or by 10.2 per cent.

The low estimate prepared for the 1971-1981 period is a theoretical alternative forecast indicating the relationship between a high and a low forecast in the range. For example, the spread between the high (optimistic) and the low (pessimistic) demand forecast for 1981 and also for the cumulative demand in the 1971-1981 period in Ontario is 12 percent. This spread indicates by and large the elasticity of demand for mineral aggregate and varies considerably in various economic regions as indicated below:

| ECONOMIC REGION | 1981 | 1971-1981 average |
|---|---|---|
| Central Ontario Economic Region | 6.7% | 8.5% |
| Southwestern Ontario Economic Region | 11.4% | 9.4% |
| Eastern Ontario Economic Region | 22.6% | 18.2% |
| Northeastern Ontario Economic Region | 22.6% | 22.5% |
| Northwestern Ontario Economic Region | 16.4% | 16.6% |

This forecasting methodology applied to a study of demand for mineral aggregate in Ontario's economic regions and counties produces acceptable forecasts where the margin of error up to 10 percent is not significant. It is expected to improve considerably, when the quality of basic data used for projections, such as Gross Provincial and Gross Regional Product, actual construction expenditure and data series on shipments of aggregate by destinations from the originating pits and quarries becomes available in consistent statistical series.

Transportation of aggregates by water.

# INTRODUCTION

Mineral Aggregates are non-renewable earth resources which are vital for all types of construction and the Ontario economy. Over 120 million tonnes per year of these structural materials are used in the Province for everything from housing and high-rise commercial developments to highways and harbours. One job in ten is estimated to be directly or indirectly dependent on aggregates.

**Definition**

For the purpose of this study, mineral aggregate is defined as sand & gravel and crushed stone used in construction and manufacturing, but does not inlude building and ornamental stone.

**Geology**

Sand & gravel are unconsolidated earth materials produced by the erosion of rocks. They consist predominantly of quartz with other minerals and rock particles which may form beneficial or deleterious constituents depending on the intended use. Sand is that fraction sized between 0.063 to 2 millimetres. Gravel, strictly speaking, ranges from about 4 to 64 millimetres but in naturally occurring deposits there are often larger sizes (i.e. pebbles, cobbles & boulders) which can be reduced by crushing. The term "sand" is also used to describe the fine sizes produced by crushing rock, slag or other materials.

Most sand and gravel in Ontario was deposited by glacial or fluvioglacial action toward the end of the last (Wisconsinan) stage of the Pleistocene. As such the deposits are randomly distributed. Major occurrences are in glacial outwash deposits and in the kame-moraines. Crushed stone aggregate can be produced from many kinds of hard rock which is quarried and reduced to the desired sizes by crushing. Most commonly Palaeozoic limestones and dolostones are quarried for aggregate in southern Ontario since massively bedded formations of these rocks conveniently occur at or near surface, close to major demand centres, eg. in the Niagara Escarpment. However, other rock-types such as traprock (diabase/basalt) and granite can also be used although crushing of igneous rocks is more difficult and costly.

**Production**

Sand and gravel is produced from pits (unconsolidated material), while crushed stone is produced from quarries (being consolidated hard rock).

Extractive Operations at Standard Aggregates Pit at Uxbridge

Sand and gravel form the largest tonnage of aggregates produced in this province; crushed stone being generally more expensive to produce. Crushed stone can substitute for sand and gravel to a large extent. However, difficulties and costs of crushing to produce artificial sand of the desired specifications render it uncompetitive with natural sand for certain uses. Crushed stone is often blended with natural sand to meet certain construction material specifications.

Uses

About 90% of sand and gravel is used as construction aggregates for concrete and asphalt mixes, for road base and for fill. Road construction and maintenance consumes about 50% of all aggregates (including crushed stone). There are also important non-structural applications for certain qualities of sand and gravel; for example, in glass manufacture, for foundry sand, as backfill in underground mines, for abrasive products, silicate chemicals and as filtering media.

Crushed stone, mostly limestone and dolostone, is used for aggregate and is used in place of sand and gravel to a considerable extent, with the limitations noted above.

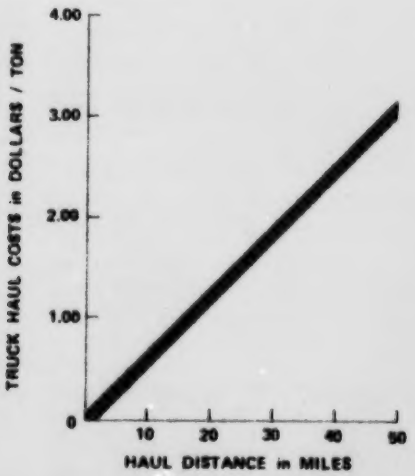
J. B. Regan Pit Operations at Uxbridge

Crushed stone also has other important uses, for example in cement production, lime manufacture and as a flux in smelting iron and other metals. Dolostone is also used in the production of calcium and magnesium metals. In addition, limestone/dolostone and other rocks are used as building and ornamental stone.

Most uses of sand, gravel and crushed stone aggregate require conformity to detailed specifications of size, physical characteristics and chemical composition. Rarely do proportions of the various size fractions in naturally occurring sand and gravel meet the stringent specifications for the intended use. The required specifications must usually be met by crushing, screening and washing. If an aggregate deposit lacks certain characteristics which are required for a specific use, the potentially valuable material may be discarded by the producer or sold at a lower price for fill or another lower priority use than might be realized at another place or time where the material would be in demand. Frequently large quantities of fine sand are produced as by-products of the benefication of sand and gravel. Often there are insufficient ready markets for this material which ends up being disposed of, for example, as fill in rehabilitation projects.

**Transportation**

Transportation charges usually constitute a major part of the delivered cost of aggregate and in many instances they are greater than the sales value of the processed material at the pit or quarry — transportation costs are sometimes over 60% of the delivered price.




**TRUCK HAUL COST – DISTANCE RELATIONSHIP**

A recently published "Mineral Aggregate Transportation Study" (produced by consultants for the Ministry of Natural Resources and released April 1981) has shown that truck haulage will probably maintain its dominant position as the transportation mode for aggregates and will remain important for local delivery even if rail and water transport eventually become competitive for long distance transportation to central distribution points.

**Trucking of Aggregates by ARMBRO Aggregate at Caledon**

Trucking of aggregates, however, causes certain nuisance problems (dust, noise, congestion, flying stones) which makes it one of the chief adverse social impacts related to aggregate extraction. The Mineral Aggregate Transportation Study makes recommendations toward mitigating many of these problems. Careful land-use planning can also assist in this regard.

**Mineral Aggregate Resource Management — Government Role**

The aggregate industry, to a greater degree than any other segment of the mineral industry and most other industries with the possible exception of waste disposal, is beset with environmental concerns, social impact problems and land use conflicts associated with urban expansion. The irony of this situation is that urban and rural growth depends upon centrally located sources of low-cost aggregate. It is noteworthy that a single zoning or land use decision can eliminate tens of millions of tonnes of these construction materials needed for area development.

Problems between the aggregate industry and the public started with the post World War II economic and development boom, and can be traced to several contributing factors:

i) a marked increase in demand for aggregates

ii) a concentration of production in large operations close to the major urban centres of consumption

iii) a growing populaton of ex-urbanites in the "rural-urban" fringe where most production occurs

iv) growing environmental awareness since the 1960's

v) lack of rehabilitation and "good neighbour" relations on the part of many aggregate producers

The result was a growing confrontation between the aggregate industry and local residents and environmental groups. In response to this situation, many municipalities found themselves pressured into passing restrictive planning controls on pits and quarries, often trying to prohibit new operations. In addition, the growth of suburban, county residential and "bedroom" communities resulted in a significant loss of valuable aggregate resources through developments location on top of, or adjacent to, the deposits.

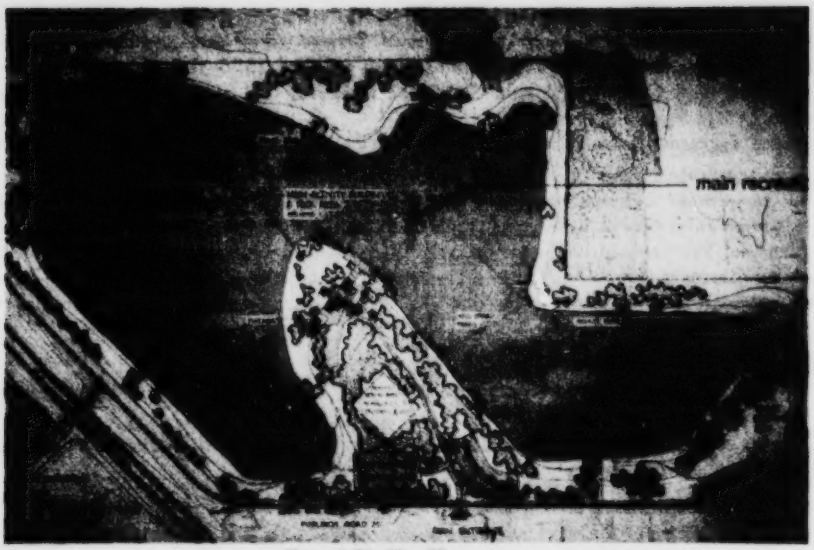
In turn, aggregate producers, municipalities and the Provincial Government became increasingly concerned for the continued availability of aggregates (notably sand and gravel) at reasonable cost to the construction industry and other consumers.

At this point, in the late 1960's the Government became involved in attempts to resolve these conflicts. First, it was clearly necessary to provide some sort of control and standards for pit and quarry operations and to mandate rehabilitation. The first major effort in this regard was the introduction of The Pits and Quarries Control Act in 1971. Noble as this first attempt was, a few years experience showed it to lack teeth. Moreover, other problems concerning the future availability of aggregates and municipal planning had not been addressed.

In December 1976, the Ontario Mineral Aggregate Working Party (O.M.A.W.P.), after far-reaching public and municipal consultation, released its report. The O.M.A.W.P. report showed a need to tighten up on pit and quarry operations and their rehabilitation in order to deal more effectively with nuisance and environmental problems, while also ensuring that aggregates continue to be available to meet demand at reasonable cost to society — i.e. a need for improved legislation and also a need for better planning.

The result of this has been the development of i) the proposed Aggregates Act to replace the Pits and Quarries Control Act and ii) a "Mineral Aggregate Resource Planning Policy" and its precursor "Mineral Aggregate Policy for Official Plans").

Among the main provisions of the Aggregates Act are more stringent controls, more exacting rehabilitation and environmental requirements and financial remuneration to municipalities.



Gravel Pit Site Plan

Planning is primarily a municipal responsibility under The Planning Act. Hence the planning policy provides direction to municipalities on planning for aggregate resources and the extractive industry.

One of the most important elements of the planning policy is the protection of aggregate resources from incompatible land uses for possible future extraction. Ontario is fortunate in having quite abundant sand, gravel and stone resources close to the major urban markets (with one or two notable exceptions, such as Windsor and Sarnia).

It is essential that as much as possible of these resources be kept free of developments which would hinder or preclude the option of future extraction. Also it is essential to secure sources of supply as close to markets as possible because of the very high (and escalating) transportation cost factor in the delivered price of aggregates at the construction site.

Not only must these vital resources be protected, there must also be a non-prohibitive and fair mechanism for obtaining planning permission to allow the private sector to open new pits and quarries to meet the demand for aggregates. This is also largely the role of municipal official plans. Through its planning, a municipality must strive to provide for the present and future need for aggregates yet also satisfy the needs for other, often competing land uses and to protect the welfare of its residents and the environment. Such a task requires careful evaluation of many disparate matters, and often compromises and trade-offs are necessary.

Aggregate resource planning and the legislation to control pit and quarry operations and rehabilitation are parallel components of mineral aggregate resource management. They are complementary but separate in their functions and implementation. Legislation is administered provincially through a licensing process to provide uniformity (where the Act applies).

Provincial planning policy must be flexible to meet varying conditions and needs from municipality to municipality, and is implemented at the local level.

Careful site planning and controls can largely eliminate environmental and nuisance problems associated with extraction. Such is the purpose of a license and site plan required by the legislation. Use of natural or artificial berms and tree screening for aesthetic purposes,

Progressive Rehabilitation, T.C.G. Cornfield in the Pit at Brantford

minimizing blasting, noise reduction through the use of different extraction methods and equipment, dust reduction through use of dust collectors, sprinkler systems etc., and the institution of proper housekeeping practices can all contribute to mitigating pit and quarry problems. However, rehabilitation is the key to achieving public acceptance of pits and quarries.

**Rehabilitation**

Rehabilitation of pits and quarries is essential to achieve environmental aims, to minimize the impact of extractive operations on local communities, for the overall aesthetics of the countryside and for making productive use of the extracted lands.

Golf course at East Park, London in former sand and gravel pit.

Under The Pits and Quarries Control Act, final rehabilitation is mandatory and progressive rehabilitation is encouraged by a rehabilitation security deposit of 8¢ per tonne. However this Act lacks readily enforceable provisions, and thus it is often difficult to assume a complete rehabilitation of large pits and quarries which were in operation prior to passage of the Act in 1971. The proposed new Aggregates Act requires progressive rehabilitation (i.e. rehabilitation concurrent with extraction). Progressive rehabilitation is usually easier and less costly than rehabilitating only after all extraction has ceased, since equipment used in stripping and mining can be employed directly in rehabilitation without stockpiling and multiple movement of overburden.

Planning, including a clear determination of the eventual post-extractive use of a pit or quarry site can facilitate rehabilitation. A rehabilitation plan is required as part of the site plan for the license from the Ministry of Natural Resources under the legislation. Municipal official plans are also required to provide policies to guide rehabilitation. Where possible, the intended afteruse(s) can be established in an official plan, thereby guiding the producer in his rehabilitation design.

Almost any after-use is possible for a pit or quarry, but the actual choice will depend to a large extent on whether or not extraction proceeds below the water table and on the surrounding land-uses. Despite problems with The Pits and Quarries Control Act's provisions for rehabilitation, many of the larger aggregate producers are providing excellent examples of rehabilitation in Ontario, including agriculture, forestry, housing, wildlife refuge(s), golf courses and many other uses.

**Underground Mining**

In the future, underground mining for stone aggregate may become competitive with quarries. Although underground mining costs are presently somewhat higher, there are distinct advantages. For example, underground mines can be operated on a year-round uninterrupted basis, do not require extensive removal of overburden or involve hefty rehabilitation costs, and the mined-out underground space can have considerable value for a host of uses, such as warehousing. In addition, most of the environmental and social problems associated with surface extraction are mitigated.

**Future Need for Aggregates-Demand Forecasting**

Some idea of the future demand for aggregates is important for effective planning and for developing provincial policy for structural materials. However, the forecasts of demand for mineral aggregate derived from studies of construction activity related to Gross Provincial Product are affected by the unpredictable variability in the level of construction and a lack of stability of proportionate distribution of construction by type of construction.

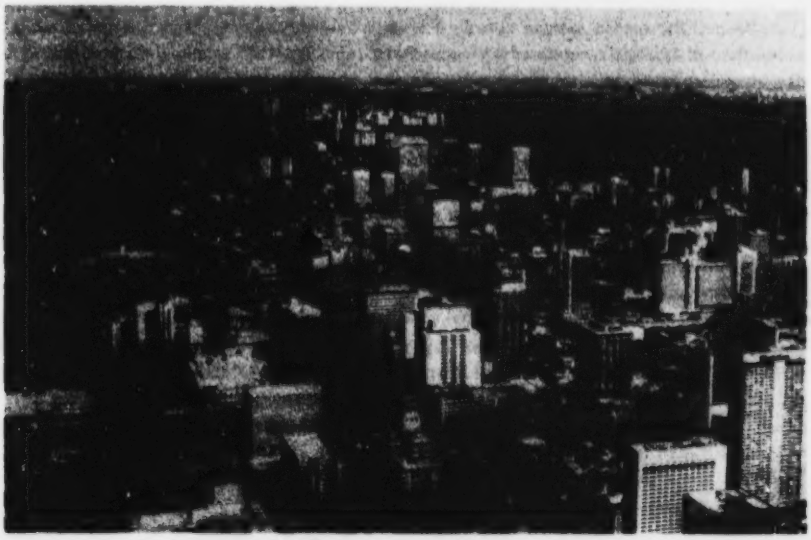
Moreover, the assumption of stability for the **constant input factors** for construction types in the long term, may also be erroneous by a considerable margin should the future technological change introduce new construction types e.g. underground structures or new building materials such as foam and plastics and a more widespread use of waste materials in construction.

The instability in the mix of construction is to a considerable extent affected by specific large scale construction projects such as highway construction or large industrial complexes. This instability is progressively more pronounced at lower sub-provincial jurisdictions, and, since the demand for aggregates is derived mainly from construction, the long term forecasts of the demand at lower levels of jurisdiction, e.g. counties or districts, are less reliable than the demand forecasts for the Province or major economic regions in which major construction projects are by and large a continuing activity. Such instability in demand makes long term demand forecasting difficult, and requires periodic revisions of long term demand projections.

The demand forecasts made under various assumptions of economic growth indicate that the Provincial long-term demand for aggregates will exceed substantially the present level of production. Therefore, it is essential that planning authorities protect as much of these resources as is practicable in light of other provincial programs and local planning considerations. While protection of aggregate resources should be done with an eye to the long term future, short term demand forecasting is useful to establish basis and tests for longer term forecasting and to enable the industry and planning authorities to determine when and where certain aggregate sources may be needed and how to plan for their utilization.

This report provides demand forecasts for sand and gravel and crushed stone to the year 1981 inclusive.

As population and the demand for aggregates increase and readily available sources of sand and gravel become depleted near to its markets, problems of supply and those of the aggregate industry will become more complex. However, it is anticipated that tools and methodologies such as planning policy and legislation, developed as a result of recent and on-going studies, can be further developed and updated in efforts to meet the problems of the future.



TORONTO — A major user of aggregate in Ontario

## DEMAND FORECASTING

Forecasting the demand for mineral aggregates in Ontario basically requires forecasting of expenditures by category (type) of construction. A consistent historical series of Provincial data, available from Statistics Canada publication entitled Construction in Canada, Catalog No. 64201, may be of major assistance in preparation of such forecasts.

Another type of data directly relevant to studies of construction activity, which is published by Statistics Canada with suitable breakdowns by type of construction is a record of the building permits issued by local municipalities in Canada. These data provide information on the number of building permits issued and on estimated value of construction and are aggregated basically on national and provincial levels with some sub-provincial breakdown.

The total value of construction work performed, as reported by Statistics Canada (Construction in Canada Catalog No. 64-201) consists of "new" and "repair" construction expenditures. When an historical relationship of this total construction value to Gross Provincial Product is established, an assumption is implied that new construction and repairs taken together represent, by and large, a constant relationship between them. At best this is true with respect to road construction maintenance and repair. In all other types of construction the data published for repairs concerns only minuscule amounts of aggregate, because all major expansions and renovations generally considered to be part of "repairs" have already been included in published data on **new construction** as explicitly stated by Statistics Canada in the definition of construction activity reproduced below (Cat. 64-201). It would appear to be only reasonable to follow Statistics Canada's statistical concepts if one uses Statistics Canada data.

Building permits are being issued for residential and non-residential buildings only. The value of building permits, as a rule, is only a crude estimate — usually understated. The actual construction for which a building permit is taken out might be delayed, parameters may be changed or a project might be abandoned. There is no follow-up on the fate of the project for which the building permit has been issued. With an understanding of these short-comings these building permit data are still a useful input to economic analysis because they provide an insight into the segment of construction activity by category of construction at a sub-provincial level.

The construction expenditure data for the 1947-1974 period portrays the dynamic construction activity of the post World War II era. Most of these construction projects such as highways, roads to resources, federal and provincial government building complexes, subway construction, office and commercial buildings, nuclear and hydro plants, dams, and a multitude of other construction projects, due to the current difficult economic situation, will probably not be undertaken on such a scale in the 1980's.

The preceding considerations suggest that a projection of economic growth and a forecast of demand for aggregate based on trends in the 1971-1978 period would be less influenced by the boom years' data series and consequently would be more realistic. Annual and average annual ratios of each type of construction to the total construction figures have been calculated for use in breaking down the total construction expenditure forecast at a sub-provincial level by categories of construction.

The demand for mineral aggregates in the Region and in each regional municipality/county must, in addition to the statistical forecast for construction requirements, be supplemented by a forecast of the demand for aggregate for other unspecified uses, including exports, the production of agricultural and industrial lime, aggregate uses on camping and vacation grounds and farms and, last but not least, aggregate consumption for flux in smelters and for mine backfill.

## DEFINITIONS
## (CONSTRUCTION IN CANADA S.C. CAT. NO. 64-201)

Construction is defined as the creation, renovation, repair and demolition of immobile structures and the alteration of the natural topography of the ground.

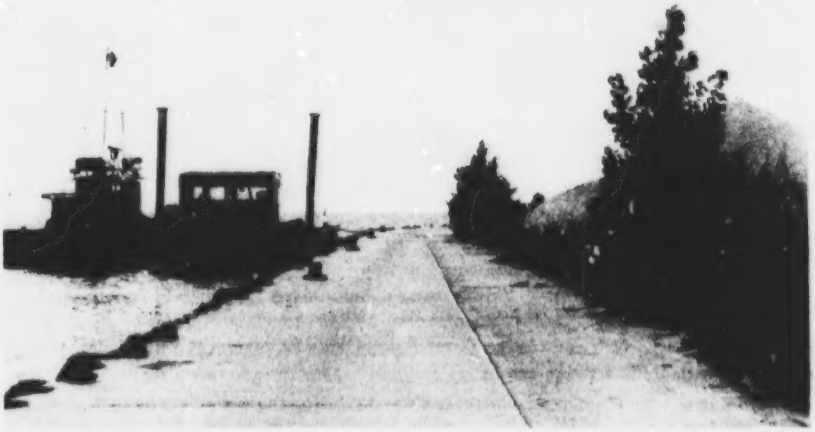
**New construction comprises all new work put in place, as well as additions and major renovations, conversions and alterations where either a structural change takes place or the life of an existing asset is extended beyond its normal life expectancy.**

Repaid construction consists of minor renovations and alterations made to maintain the operating efficiency of the existing structures.

## DEFINITIONS
## (ONTARIO STATISTICS 1977 p. 601-602)

**Capital expenditures** include the cost of procuring, constructing and installing new durable plant and machinery, whether for replacement of worn or obsolete assets, or as net additions to existing assets. Included are all capitalized costs such as architectural, legal and engineering fees, as well as the value of work on capital assets undertaken by firms with their own labour force. Gross outlays are reported without any deduction for scrap or trade-in value of old assets. Excluded are expenditures made for the acquisition of previously existing structures, for used machinery and equipment unless imported and for land since outlays of this type involve only the transfer of property and not the creation of a capital asset. Housing is not generally considered a capital expenditure but it has been included because it forms a large proportion of construction expenditures and has cyclical fluctuations similar to those which characterize business, institutional and government capital expenditures.

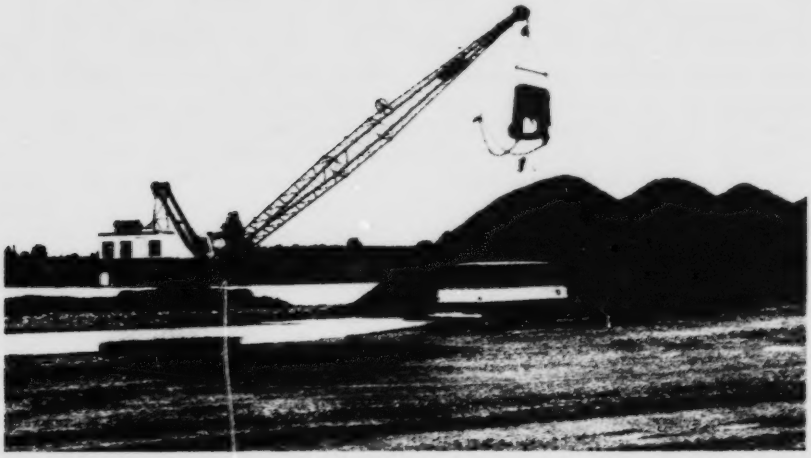
**Construction** as it pertains to investments, includes building construction and all types of engineering construction such as roads, dams, transmission lines and pipelines, as well as oil drilling and mine development.



The classification for residential construction is intended to reflect the value of building permits or construction for new dwellings: single, seasonal, double, row, apartments and conversions; and for alterations and improvements to existing dwellings: additions, structural changes, residential garages and swimming pools, and other improvements to existing dwellings.

**Industrial buildings construction** includes buildings used for manufacturing and processing, transportation, communication and other utilities and agriculture, forestry, mine and mine mill buildings.

**Commercial building construction** includes stores, warehouses, garages, office buildings, theatres, hotels, funeral parlours, beauty salons and miscellaneous commercial: signs, posters, heating and plumbing installations, etc.



**Institutional and government building construction** includes expenditures made by the community, public and government for buildings and structures: schools, universities, hospitals, clinics, churches, homes for the aged, government offices and administration buildings, law enforcement, public protection, national defence, and ancillary buildings such as dormitories, residences, church rectories, gymnasiums, heating plants, and laundries and cafeterias for hospitals, schools and universities.

Any modification to the above definitions, whether justifiable (on technical grounds) or not, without corresponding adjustment of the appropriate data might render the data useless.

It is most probable that the usage of aggregate materials in repair construction, except in road-type maintenance and road repair construction, as reported by Statistics Canada is not significant, and that the error in omitting the value of repairs in forecasting the demand for aggregate would be significantly lesser than by including it into a total construction value. Consequently, only New Construction expenditures for other than road-type construction, as reported by Statistics Canada, have been related to Gross Provincial Product for the purpose of projecting the demand for aggregates.

The data on construction expenditures in Ontario during the years 1971 to 1978 are indicated in Tables 2 and 3.

# FORECASTING OF DEMAND FOR MINERAL AGGREGATE IN ONTARIO ECONOMIC REGIONS

The principal objective of the study of demand for mineral aggregate in Ontario Economic Regions was to develop an uncomplicated model for forecasting the demand at the subprovincial level.

In order to forecast the demand for mineral aggregate in sub-provincial jurisdictions, in the absence of directly relevant data, it has been necessary to rely extensively on statistical interpolations. The essential economic variables considered for estimating the demand were population, gross incomes per capita and indexes of market power, disposable income and market attraction. These indexes or ratings were calculated in order to supplement knowledge about the degree of concentration of income and sales in relation to population size in study areas.

The developed methodology, uses historical series of data for Gross Provincial Product per Capita which after an adjustment by market and income rating indexes, that measure the pull of the Ontario Economic Regions' markets, indicate the gross income per capita in the Regions. This respective gross income per capita multiplied by the number of residents in an Economic Region produces an estimate of the Gross Regional Product.

Finally, the calculated ratio of construction expenditure in Ontario to Gross Provincial Product is applied to Gross Regional Product and modified by an average Market Attraction Index developed for each Region, to yield the total construction expenditure in the Region.

**The Market Rating Index** is obtained by expressing regional retail sales per capita as a percentage of the Ontario retail sales per capita. This is an index of sales power (MRI).

**Disposable Income Index** is obtained by expressing disposable income per capita in the Region as a percentage of Ontario's income per capita. The income rating measures, in relative terms, the average income of residents of a given area and serves as a useful indicator of average purchasing power (IRI).

**Regional Market Attraction Index** is obtained by dividing the Market Rating Index by Income Rating Index given the Ontario average of 1 as a base. This widely used single market measuring index is termed in the U.S. market surveys as the Buying Power Index (MAI).

In order to obtain the above indexes for regional municipalities and counties, the per capita retail sales and incomes were calculated in the same manner and related to the corresponding data for each Ontario Economic Region.

The construction expenditure was, subsequently, broken down by the four types of construction through the application of an average 1971-1978 share of each construction type to Ontario's total construction (Scenario A) and, alternatively, by extending the 1971-1978 trend (Scenario B) to forecast the 1971-1978 construction expenditure alternatives in the Region.

The regional construction expenditures by type of construction multiplied by the input factors, developed for Non-Road Engineering Construction, Residential Building and Non-Residential Building by Consultants in Ontario Aggregate Studies; and, input factors developed by the Ministry of Transportation and Communications for Road Construction, delineate the Regional demand for mineral aggregate.

In Scenario A it is assumed that the proportions of construction activity by type in Ontario Regions during the years 1978 to 1981 will be approximately the same as the average proportion in the Province during the 1971-1978 period.

In Scenario B it is assumed that the construction by type in Ontario Regions during the 1978-1981 period will follow the Ontario trend of the 1971-1978 period.

# FORECASTING OF DEMAND FOR MINERAL AGGREGATES IN REGIONAL MUNICIPALITIES AND COUNTIES

In forecasting a short-term demand for mineral aggregate in Regional Municipalities and Counties the underlying assumptions are:

- the general validity of input factors as developed by consultants in Ontario Aggregate Studies for Building Construction and Non-Road Engineering Construction and
- the validity of the average and the trend ratios of building permits in Regional Municipalities/Counties to total building permits in Economic Regions for aggregate's demand distribution purposes.

The total demand forecast in each Economic Region is distributed to Regional Municipalities, Counties and Districts in the following manner:

- Residential and Non-Residential Building demand is allocated on the basis of building permit ratios for each of these two types of construction, respectively.
- Assuming that Non-Road Engineering Construction is directly related to the total Building Construction, the sub-regional allocations are made on the basis of distribution of the total Building Construction in the Region.
- The demand for mineral aggregate for Road Engineering Construction in each Regional Municipality and County in Southern Ontario is forecast on the basis of analyses of individual contracts for road building in selected jurisdictions, capital budget forecasts for provincial and municipal road building (assisted by the Province) and on Ministry of Transportation and Communications estimates for un-assisted road building in the municipalities of Central Ontario Planning Region.

  Since road construction uses vast quantities of aggregates, MTC undertook a revision of input factors for Southern Ontario through an analysis of aggregate consumption in selected type-municipalities and a determination of unit value of aggregate material specified in contracts of provincial road program.

  The demand for mineral aggregate for roads construction in Northern Ontario has been forecast with the assistance of the Sudbury and Thunder Bay aggregate studies and is based on analyses of the areas under study, their population, density and road systems.

  Other than for construction purposes, uses of mineral aggregate in Ontario Economic Regions have been estimated as a constant on a per capita basis of the difference between the past production of aggregates and its consumption by the construction activity in Ontario.

Whenever a time constraint and/or scarcity of resources would not allow the undertaking of a detailed micro-study, the above statistical method might be used. It is interesting to note for example that the cumulative demand for Central Ontario Region in the 1978-81 period, established on the basis of the micro-study of road construction as an average of "A" and "B" scenarios, totals 269.1 million tonnes and the average of demand forecasts, based exclusively on statistical interpolations, amounts to 256.1 million tonnes — a total difference of about 5 percent.

It must be admitted, however, that in preparing forecasts by a distributive model to regional municipalities/counties an unforeseen change in the Ministry of Transportation and Communications policy with respect to its road building program might very substantially distort the forecast for a Regional Municipality and/or County affected by such a policy change. Consequently, it is advisable to consult the Ministry of Transportation and Communications concerning major road building programs planned for areas under study and make suitable adjustments to the demand forecast.

**Input Factors**

Data directly relevant for calculation of input factors at sub-provincial level does not exist in current statistical data base; consequently, regional or special areas' input factors had to be developed separately for each regional study of demand for mineral aggregate.

In this study an input factor is a fraction of a metric tonne of mineral aggregate per one dollar of construction expenditure deflated by the Gross National Expenditure Implicit Price Index to a 1971-constant dollar.

## MINERAL AGGREGATE CONSTRUCTION INPUT FACTORS FOR SOUTHERN ONTARIO
(With Construction Value In 1971 Constant Dollars)
(Tonnes)

| Type of Construction | Input Factors | | |
|---|---|---|---|
| | For Sand and Gravel | For Crushed Stone | Total Mineral Aggregate |
| Residential Building | 0.002486 | 0.001472 | 0.003958 |
| Non-Residential Building | 0.004394 | 0.002747 | 0.007141 |
| Non-Road Engineering | 0.009122 | 0.004921 | 0.014043 |
| Road Engineering | 0.089991 | 0.044448 | 0.138600 |

**Northern Ontario**

In order to avoid a time loss and a considerable expense, it is felt that for the purpose of a short-term forecasting of demand for mineral aggregate it would be expedient and adequate to utilize the results of the special studies done at depth by consultants for the Thunder Bay and the Sudbury areas of Northern Ontario. The geographical location and a composition of the constituent urban-rural areas in these two studies reflect by and large the geographical parameters of Northern Ontario. Consequently, the input factors averaged from these two studies are assumed to be representative of Northern Ontario and suitable for forecasting the demand for mineral aggregate in its economic regions.

With the exception of the input factor for non-road engineering construction which approximates the Southern Ontario standard, the remaining input factors for Northern Ontario indicate a considerably higher consumption of mineral aggregate than the standard of consumption in the southern part of the Province.

The reason for this higher pattern of consumption per unit value of construction is considered to be the difference in general terrain and climatic conditions of the area. The input factors derived from the studies of the Thunder Bay and the Sudbury areas, adjusted to metric tonnes and 1971 constant dollars, and the calculated averages for Northern Ontario Economic Regions are as follows:

| Type of Construction | Sudbury | Thunder Bay | Estimated NE Ontario |
|---|---|---|---|
| Residential Building | 0.005604 | 0.012382 | 0.008993 |
| Non-Residential Building | 0.011139 | 0.016179 | 0.013659 |
| Non-Road Engineering | 0.020841 | 0.008657 | 0.014749 |
| Roads Engineering | 0.168837 | 0.213071 | 0.190954 |

**Construction Expenditure in Ontario**

The data set out in Table 1 present in historical perspective construction expenditures in millions of 1971 constant dollars calculated by applying GNE Implicit Price Index to historical values. In Tables 2 and 3 the Ontario construction expenditures in the 1971-1978 period are shown by types of construction in millions of 1971 constant dollars and as percentage of the total construction expenditures respectively. The projection of Ontario's expenditures by type of construction is presented in Table 4, while an historical series data indicating the demand for mineral aggregate in the years from 1971 to 1981 is shown on Table 8.

TABLE 1

CONSTRUCTION EXPENDITURES BY PRIVATE & PUBLIC SECTOR IN ONTARIO

| Year | New Construction | Road Repair | Total Adjusted Construction** | Total Construction and Repair* (unadjusted) |
|---|---|---|---|---|
| | (Current) | | (1971 Constant Dollars in Millions) | |
| 1950 | 895 | 40 | 1,706 | 3,191 |
| 1951 | 1,023 | 55 | 1,764 | 3,486 |
| 1952 | 1,137 | 54 | 1,870 | 3,564 |
| 1953 | 1,276 | 43 | 2,074 | 3,918 |
| 1954 | 1,317 | 66 | 2,141 | 4,007 |
| 1955 | 1,486 | 60 | 2,378 | 4,217 |
| 1956 | 1,788 | 47 | 2,723 | 4,515 |
| 1957 | 2,067 | 47 | 3,073 | 5,085 |
| 1958 | 2,144 | 52 | 3,146 | 5,400 |
| 1959 | 1,904 | 57 | 2,754 | 4,703 |
| 1960 | 1,828 | 65 | 2,626 | 4,335 |
| 1961 | 1,794 | 49 | 2,542 | 4,273 |
| 1962 | 1,936 | 57 | 2,712 | 4,413 |
| 1963 | 2,088 | 56 | 2,866 | 4,314 |
| 1964 | 2,249 | 57 | 3,007 | 4,454 |
| 1965 | 2,533 | 75 | 3,297 | 4,774 |
| 1966 | 3,088 | 97 | 3,851 | 5,417 |
| 1967 | 3,173 | 109 | 3,821 | 5,407 |
| 1968 | 3,484 | 105 | 4,046 | 5,647 |
| 1969 | 3,825 | 57 | 4,188 | 5,722 |
| 1970 | 4,127 | 60 | 4,325 | 5,528 |
| 1971 | 4,662 | 68 | 4,730 | 5,597 |
| 1972 | 5,253 | 65 | 5,070 | 5,989 |
| 1973 | 5,981 | 74 | 5,325 | 6,420 |
| 1974 | 7,088 | 84 | 5,542 | 6,493 |
| 1975 | 7,493 | 81 | 5,170 | 6,603 |
| 1976 | 8,370 | 78 | 5,267 | 7,175 |
| 1977 | 8,619 | 87 | 5,070 | 7,641 |
| 1978 | 9,063 | 87 | 5,008 | n.a. |

* includes total repair construction

** includes repair expenditure only for road-type construction

Source: Statistics Canada CAT. No. 64-201

TABLE 2

## VALUE OF CONSTRUCTION BY TYPE IN ONTARIO
(1971 Constant Dollars in Millions)

| Type of Construction (new Const.) | 1978 | 1977 | 1976 | 1975 | 1974 | 1973 | 1972 | 1971 | Average 1971-1978 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Residential Building | 2,235 | 2,138 | 2,251 | 1,743 | 2,220 | 2,266 | 1,942 | 1,642 | 2,055 |
| 2. Non-Residential Building | 1,058 | 1,145 | 1,214 | 1,468 | 1,567 | 1,447 | 1,411 | 1,459 | 1,346 |
| 3. Roads, Highways, Aerodrome | 351 | 377 | 377 | 433 | 451 | 433 | 436 | 450 | 414 |
| 4. Non-Roads Engineering Construction | 1,364 | 1,410 | 1,425 | 1,526 | 1,304 | 1,179 | 1,281 | 1,179 | 1,333 |
| 5. All Construction | 5,008 | 5,070 | 5,267 | 5,170 | 5,542 | 5,325 | 5,070 | 4,730 | 5,148 |

Source: Statistics Canada Cat. 64-201
r: revised



TABLE 3

## VALUE OF CONSTRUCTION BY TYPE IN ONTARIO
(Percent of the Total)

| Type of Construction (new Const.) | 1978 | 1977 | 1976 | 1975 | 1974 | 1973 | 1972 | 1971 | Average 1971-1978 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | ( % ) | | | | |
| 1. Residential Building | 44.6 | 42.2 | 42.7 | 33.7 | 40.1 | 42.6 | 38.3 | 34.7 | 39.9 |
| 2. Non-Residential Building | 21.2 | 22.6 | 23.0 | 28.4 | 28.3 | 27.2 | 27.8 | 30.8 | 26.1 |
| 3. Roads, Highways, Aerodrome | 7.0 | 7.4 | 7.2 | 8.4 | 8.1 | 8.1 | 8.6 | 9.6 | 8.0 |
| 4. Non—Roads Engineering Construction | 27.2 | 27.8 | 27.1 | 29.5 | 23.5 | 22.1 | 25.3 | 24.9 | 26.0 |
| 5. All Construction | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100.00 |

Source: Statistics Canada Cat. 64-201

## TABLE 4

### PROJECTION OF ONTARIO'S EXPENDITURES BY TYPE OF CONSTRUCTION
(1971 Constant Dollars in Millions)

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | $ | % of Total | $ | % of Total | $ | % of Total | $ | % of Total |
| Residential Building | 2,235 | 44.6 | 2,302 | 44.1 | 2,356 | 45.0 | 2,411 | 45.9 |
| Non-Residential Building | 1,058 | 21.2 | 1,082 | 20.7 | 1,023 | 19.5 | 964 | 18.3 |
| Roads Engineering | 351 | 7.0 | 351 | 6.7 | 337 | 6.4 | 323 | 6.2 |
| Non-Road Engineering | 1,364 | 27.2 | 1,489 | 28.5 | 1,523 | 29.1 | 1,557 | 29.6 |
| TOTAL CONSTRUCTION | 5,008 | 100.0 | 5,224 | 100.0 | 5,239 | 100.0 | 5,255 | 100.0 |

## TABLE 5

### GROSS PROVINCIAL PRODUCT POPULATION AND INCOME PER CAPITA IN ONTARIO

| Year | Actual GPP 1971 constant $ in millions | Population No. | Income/Capita 1971 constant $ |
|---|---|---|---|
| 1971 | 38,100 | 7,703,100 | 4,946 |
| 1972 | 41,251 | 7,833,900 | 5,266 |
| 1973 | 44,053 | 7,938,900 | 5,549 |
| 1974 | 46,070 | 8,093,900 | 5,692 |
| 1975 | 44,580 | 8,225,800 | 5,420 |
| 1976 | 46,800 | 8,325,314 | 5,621 |
| 1977 | 49,015 | 8,458,049 | 5,795 |
| | | Linear Projection for 1978-1981 | |
| 1978 | 50,605 | 8,590,784 | 5,890 |
| 1979 | 52,190 | 8,723,519 | 5,983 |
| 1980 | 53,775 | 8,856,254 | 6,072 |
| 1981 | 55,360 | 8,861,341 | 6,247 |

## TABLE 6 CONSTRUCTION EXPENDITURES AS PERCENTAGE OF G.P.P., RETAIL SALES AND DISPOSABLE INCOME IN ONTARIO 1971-1981

| Year | Construction Expenditure | Actual G.P.P. | Retail Sales | Disposable Income | Construction Expenditure as % of: G.P.P. | Retail Sale | Disposable Income |
|---|---|---|---|---|---|---|---|
| | | (1971 Constant Dollars in Millions) | | | | ( % ) | |
| 1971 | 4,730 | 38,100 | 11,877 | 24,150 | 12.41 | 39.82 | 19.59 |
| 1972 | 5,070 | 41,251 | 12,859 | 24,033 | 12.29 | 39.43 | 21.10 |
| 1973 | 5,325 | 44,053 | 12,843 | 26,306 | 12.09 | 41.46 | 20.24 |
| 1974 | 5,542 | 46,070 | 12,189 | 27,271 | 12.03 | 45.46 | 20.32 |
| 1975 | 5,170 | 44,580 | 12,314 | 28,063 | 11.60 | 41.98 | 18.42 |
| 1976 | 5,267 | 46,800 | 13,482 | 30,526 | 11.25 | 39.07 | 17.25 |
| 1977 | 5,070 | 49,015 | 13,322 | 31,778 | 10.34 | 38.06 | 15.95 |
| 1978 | 5,008 | 50,605 | 13,420 | 32,372 | 9.90 | 37.32 | 15.47 |
| **Extrapolation** | | | | | | | |
| 1979 | 5,224 | 52,190 | 13,601 | 33,577 | 10.00 | 38.41 | 15.56 |
| 1980 | 5,239 | 53,775 | 13,781 | 34,782 | 9.72 | 38.02 | 15.06 |
| 1981 | 5,255 | 55,360 | 13,961 | 36,246 | 9.50 | 37.64 | 14.50 |

Subsequently, the Total Construction Expenditure is broken down by type of construction under the following two assumptions:

(a) that profile of construction in Central Ontario in 1978-1981 will be the same as the 1971-1978 average for Ontario (See Table 3);

(b) that profile of construction in Central Ontario in 1978-1981 will follow the 1971-1978 trend shown in Table 4.

TABLE 7

## VALUE OF BUILDING PERMITS ISSUED AND CONSTRUCTION VALUE IN ONTARIO, 1971-1978

(1971 Constant Dollars in Millions)

| | Residential Building | | | Non-Residential Building | | |
|---|---|---|---|---|---|---|
| Year | Building Permits Issued | Value of Construction | Permits as % of Construction | Building Permits Issued | Value of Construction | Permits as % of Construction |
| 1971 | 1,455 | 1,642 | 88.6 | 1,145 | 1,459 | 78.5 |
| 1972 | 1,634 | 1,942 | 84.1 | 1,215 | 1,411 | 86.1 |
| 1973 | 2,081 | 2,266 | 91.8 | 1,456 | 1,447 | 100.6 |
| 1974 | 1,547 | 2,220 | 69.7 | 1,410 | 1,567 | 90.0 |
| 1975 | 1,681 | 1,743 | 96.4 | 1,260 | 1,468 | 85.8 |
| 1976 | 1,598 | 2,251 | 71.0 | 942 | 1,214 | 77.6 |
| 1977 | 1,521 | 2,138 | 71.1 | 913 | 1,145 | 79.7 |
| 1978 | 1,606 | 2,235 | 71.9 | 986 | 1,058 | 93.2 |
| **Average** | | | | | | |
| 1971-78 | 1,640 | 2,055 | 79.8 | 1,166 | 1,346 | 86.6 |
| **Forecast** | | | | | | |
| 1979 | 1,596 | 2,302 | 69.3 | 935 | 1,082 | 86.4 |
| 1980 | 1,587 | 2,356 | 67.4 | 883 | 1,023 | 86.3 |
| 1981 | 1,577 | 2,411 | 65.4 | 832 | 964 | 86.3 |

Source: Statistics Canada, Building Permits, Catalog No. 64-203
Source: Statistics Canada, Construction, Catalog No. 64-201

TABLE 8 SUMMARY OF DEMAND FORECASTS FOR MINERAL AGGREGATES IN ONTARIO AND ECONOMIC REGIONS, 1978-1981

| SCENARIO | YEAR | ONTARIO TOTAL | CENTRAL ONTARIO ECONOMIC REGION | SOUTHWESTERN ONTARIO ECONOMIC REGION | EASTERN ONTARIO ECONOMIC REGION | NORTHEASTERN ONTARIO ECONOMIC REGION | NORTHWESTERN ONTARIO ECONOMIC REGION |
|---|---|---|---|---|---|---|---|
| | | | | (THOUSANDS OF TONNES) | | | |
| "A" — High | 1978 | 114,020 | 64,297 | 15,827 | 14,242 | 14,962 | 4,692 |
| | 1979 | 116,634 | 67,153 | 15,831 | 13,860 | 15,025 | 4,765 |
| | 1980 | 116,564 | 66,678 | 15,907 | 14,073 | 15,082 | 4,824 |
| | 1981 | 119,957 | 69,518 | 16,103 | 14,238 | 15,201 | 4,897 |
| "A" — Low | 1978 | 107,585 | 62,358 | 15,352 | 12,969 | 12,462 | 4,444 |
| | 1979 | 110,190 | 65,150 | 15,559 | 12,434 | 12,512 | 4,535 |
| | 1980 | 109,921 | 64,687 | 15,733 | 12,416 | 12,539 | 4,546 |
| | 1981 | 113,757 | 67,480 | 16,102 | 12,412 | 13,143 | 4,620 |
| "B" — High | 1978 | 115,897 | 66,866 | 16,158 | 14,544 | 13,973 | 4,356 |
| | 1979 | 115,241 | 69,847 | 14,533 | 12,729 | 13,777 | 4,355 |
| | 1980 | 114,418 | 69,464 | 14,291 | 12,649 | 13,675 | 4,339 |
| | 1981 | 117,220 | 72,339 | 14,268 | 12,635 | 13,624 | 4,354 |
| "A" — Low | 1978 | 109,746 | 65,061 | 15,683 | 13,242 | 11,634 | 4,126 |
| | 1979 | 109,141 | 67,807 | 14,286 | 11,444 | 11,479 | 4,125 |
| | 1980 | 108,166 | 67,290 | 14,143 | 11,185 | 11,469 | 4,079 |
| | 1981 | 111,115 | 69,963 | 14,268 | 11,027 | 11,763 | 4,094 |
| AVERAGE FORECAST | 1978 | 111,812 | 64,646 | 15,755 | 13,749 | 13,258 | 4,404 |
| | 1979 | 112,801 | 67,489 | 15,052 | 12,617 | 13,198 | 4,445 |
| | 1980 | 112,267 | 67,030 | 15,018 | 12,581 | 13,191 | 4,447 |
| | 1981 | 115,512 | 69,825 | 15,185 | 12,578 | 13,433 | 4,491 |

OPTIMISTIC EXPECTATION

FORECAST OF DEMAND FOR MINERAL AGGREGATE IN ONTARIO
BY ECONOMIC REGIONS, 1981-2001
(Thousands of Tonnes)

| YEAR | SOUTHWESTERN ONTARIO | CENTRAL ONTARIO | EASTERN ONTARIO | NORTHEASTERN ONTARIO | NORTHWESTERN ONTARIO | ONTARIO TOTAL |
|---|---|---|---|---|---|---|
| 1982 | 16,313 | 73,314 | 14,434 | 15,404 | 4,965 | 124,430 |
| 1986 | 18,497 | 84,804 | 16,260 | 17,385 | 5,558 | 142,504 |
| 1991 | 22,191 | 105,432 | 19,500 | 20,933 | 6,675 | 174,731 |
| 1996 | 26,631 | 126,110 | 23,570 | 25,520 | 7,863 | 209,694 |
| 2001 | 29,499 | 137,969 | 26,108 | 28,507 | 8,557 | 230,640 |
| 1982 to 2001 | 449,003 | 2,098,126 | 396,107 | 426,629 | 133,843 | 3,503,708 |

NOTE: Demand forecasts for individual regional municipalities, counties and territorial districts will be provided under separate cover to respective jurisdictions.

# CENTRAL ONTARIO ECONOMIC REGION

The largest consumer of mineral aggregate in Ontario, Central Ontario Economic Region, accounts for about 58 percent of the total Provincial consumption. The Economic Region comprises the following nine regional municipalities and eight counties surrounding Metro Toronto.

Regional Municipality of Durham
Regional Municipality of Haldimand-Norfolk
Regional Municipality of Hamilton-Wentworth
Regional Municipality of Halton
District Municipality of Muskoka
Regional Municipality of Niagara
Regional Municipality of Peel
Regional Municipality of Waterloo
Regional Municipality of York

Brant County
Dufferin County
Haliburton Provisional County
Northumberland County
Peterborough County
Simcoe County
Victoria County
Wellington County

Two methodologies have been used in forecasting the demand in Central Ontario Economic Region:

1. a purely statistical method of interpolation, and
2. a combination of a statistically derived demand for Building Construction and Non-Road Engineering Construction and a detailed study conducted jointly by the Ministry of Transportation and Communications and the Ministry of Natural Resources, of Road Construction.

In order to determine the per capita income for central Ontario Economic Region, an assumption was made that a reasonable relationship exists between the **gross income per capita** and the **disposable income and retail sales per capita** respectively; and, that the distribution of provincial gross income per capita to Ontario's economic regions may be estimated on the basis of the known distribution patterns for disposable incomes and retail sales.

## MARKET AND INCOME RATING INDEXES
## CENTRAL ONTARIO ECONOMIC REGION

| Year | Market Rating Index (MRI) | Income Rating Index (IRI) | Market Attraction Index (MAI) |
|---|---|---|---|
| **Ontario** | 100 | 100 | 1.0 |
| **Central Ontario Economic Region:** | | | |
| 1971 | 103.8 | 104.0 | 1.0 |
| 1972 | 103.5 | 96.1 | 1.08 |
| 1973 | 103.7 | 103.3 | 1.0 |
| 1974 | 104.1 | 103.7 | 1.0 |
| 1975 | 103.9 | 104.2 | 1.0 |
| 1976 | 101.4 | 103.3 | 0.98 |
| 1977 | 101.1 | 103.6 | 0.98 |
| **Average** 1971-1977 | 103.1 | 102.6 | 1.01 |
| **Average** 1976-1977 | 101.3 | 103.5 | 0.98 |

The preceding market and income rating indexes when applied to the Ontario Gross Income Per Capita yield the following alternative estimates of Gross Regional Income per capita in Central Ontario Economic Region (C.O.E.R.):

ESTIMATED GROSS INCOME PER CAPITA
IN CENTRAL ONTARIO ECONOMIC REGION
(1971 Constant Dollars)

| Year | Per MRI Index | Per IRI Index | Ontario Average |
|---|---|---|---|
| 1971 | 5,134 | 5,144 | 4,946 |
| 1972 | 5,450 | 5,061 | 5,266 |
| 1973 | 5,754 | 5,732 | 5,549 |
| 1974 | 5,925 | 5,903 | 5,692 |
| 1975 | 5,631 | 5,648 | 5,420 |
| 1976 | 5,700 | 5,806 | 5,621 |
| 1977 | 5,859 | 6,004 | 5,795 |
| Average 1971-77 | 5,636 | 5,614 | 5,470 |
| Average 1976-77 | 5,780 | 5,905 | 5,708 |
| 1978 | 6,001 | 6,183 | 5,890 |
| 1979 | 6,092 | 6,326 | 5,983 |
| 1980 | 6,183 | 6,468 | 6,072 |
| 1981 | 6,274 | 6,610 | 6,247 |

The estimated and projected Gross Regional Income per capita adjusted by the Market Rating Index, and the projection adjusted by the Income Rating Index represent the low-end and the high-end of the range. It is felt that a realistic estimate of gross income per capita would be in the mid-range of the two estimates, namely: 1978 — $6,092, 1979 — $6,209, 1980 — $6,326, and 1981 — $6,442.

**Gross Regional Product** estimates are calculated by applying alternative estimates of gross income per capita to estimated population in Central Ontario for the 1978 - 1981 period.

GROSS REGIONAL PRODUCT OF CENTRAL ONTARIO 1978-81
Based on Gross Income Per Capital Adjusted by

| Year | Market Rating Index | Income Rating Index | Market Rating-Income Rating Average | Population No. |
|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | |
| 1978 | 31,100 | 32,043 | 31,571 | 5,182,423 |
| 1979 | 31,967 | 33,195 | 32,581 | 5,247,354 |
| 1980 | 32,840 | 34,354 | 33,597 | 5,311,357 |
| 1981 | 33,729 | 35,535 | 33,597 | 5,375,979 |

The Gross Regional Product estimated on the basis of the Gross Income per Capita in the mid-point range of Gross Income per Capita adjusted by Market Rating Index and Income Rating Index, respectively is probably more realistic, given a short-term outlook for the economy, than the remaining low and high alternative forecasts.

## CONSTRUCTION EXPENDITURE FORECAST
## CENTRAL ONTARIO ECONOMIC REGION, 1978-1981

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| Gross Regional Product | | (1971 Constant Dollars in Millions) | | |
| MRI-Low alternative | 31,100 | 31,967 | 32,840 | 33,729 |
| Estimated Construction Expenditure: on a per-capita basis | 3,185 | 3,198 | 3,214 | 3,188 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 3,079 | 3,197 | 3,192 | 3,204 |
| Estimated Construction Expenditure: for Central Ontario adjusted by C.O.E.R. Market Attraction Index, 1971-1977 average | 3,110 | 3,229 | 3,230 | 3,236 |
| Gross Regional Product | | | | |
| IRI-High alternative | 32,043 | 33,195 | 34,354 | 35,535 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 3,172 | 3,320 | 3,339 | 3,376 |
| Estimated Construction Expenditure: for Central Ontario adjusted by C.O.E.R. Market Attraction Index 1971-1977 average | 3,204 | 3,353 | 3,372 | 3,410 |

Total Construction Expenditures in Central Ontario Economic Region are estimated by applying the ratios of construction to Gross Provincial Product in Ontario to the above estimates of Gross Regional Product in Central Ontario.

The high and low alternative forecasts of construction expenditure for Central Ontario Economic Region in the 1978-1979 period, adjusted by pull of the market, are as follows:

| Year | High | Low | Mid-point |
|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | |
| 1978 | 3,204 | 3,110 | 3,157 |
| 1979 | 3,353 | 3,229 | 3,291 |
| 1980 | 3,372 | 3,230 | 3,301 |
| 1981 | 3,410 | 3,236 | 3,323 |

Disaggregation of the forecast of sub-provincial construction expenditures into types of construction is difficult because of lack of adequate statistics at this level of disaggregation.

It is noted, however, that the average share of each identifiable type of construction in the total new construction expenditure during the 1971-1978 period in Ontario was as follows:

| Type of Construction | Share in Total Construction |
|---|---|
| | % |
| 1. Residential Building | 39.9 |
| 2. Non-Residential Building | 26.1 |
| 3. Roads, Highways, Aerodrome | 8 |
| 4. Non-Road Engineering | 26.00 |

## TABLE I CONSTRUCTION EXPENDITURES IN CENTRAL ONTARIO ECONOMIC REGION BY TYPE OF CONSTRUCTION, 1978-1981

**SCENARIO A** — Type of construction determined per Ontario average in 1971-1977

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 1,278 | 1,241 | 1,296 | 1,248 | 1,304 | 1,249 | 1,361 | 1,291 |
| 2. Non-Residential Building | 836 | 812 | 905 | 872 | 910 | 872 | 890 | 845 |
| 3. Roads, Highways, Aerodrome | 257 | 249 | 280 | 270 | 282 | 270 | 273 | 259 |
| 4. Non-Roads Engineering Construction | 833 | 808 | 872 | 840 | 877 | 840 | 886 | 841 |
| TOTAL CONSTRUCTION | 3,204 | 3,110 | 3,353 | 3,229 | 3,372 | 3,230 | 3,410 | 3,236 |

(Totals may not add due to rounding)

**SCENARIO B** — Type of construction projected per Ontario trend in 1971-1977

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 1,429 | 1,387 | 1,372 | 1,322 | 1,395 | 1,336 | 1,565 | 1,485 |
| 2. Non-Residential Building | 679 | 659 | 728 | 701 | 697 | 668 | 624 | 592 |
| 3. Roads, Highways, Aerodrome | 224 | 218 | 245 | 236 | 239 | 229 | 212 | 201 |
| 4. Non-Roads Engineering Construction | 872 | 846 | 1,008 | 971 | 1,041 | 997 | 1,009 | 958 |
| TOTAL CONSTRUCTION | 3,204 | 3,110 | 3,353 | 3,229 | 3,372 | 3,230 | 3,410 | 3,236 |

(Totals may not add due to rounding)

TABLE 2 STATISTICAL PROJECTION OF DEMAND FOR MINERAL AGGREGATE IN CENTRAL ONTARIO ECONOMIC REGION, 1978-1981

(Thousands of Tonnes)

| SCENARIO A — High | 1978 S&G | 1978 Stone | 1978 Total | 1979 S&G | 1979 Stone | 1979 Total | 1980 S&G | 1980 Stone | 1980 Total | 1981 S&G | 1981 Stone | 1981 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High construction projection Construction category determined per Ontario average 1971-1977: | | | | | | | | | | | | |
| Residential Building | 3,176 | 1,882 | 5,058 | 3,221 | 1,908 | 5,129 | 3,241 | 1,920 | 5,161 | 3,383 | 2,004 | 5,387 |
| Non-Residential Building | 3,674 | 2,296 | 5,970 | 3,977 | 2,486 | 6,463 | 3,999 | 2,499 | 6,498 | 3,911 | 2,444 | 6,355 |
| Road Engineering | 23,843 | 11,777 | 35,620 | 25,197 | 12,445 | 37,642 | 25,377 | 12,534 | 37,911 | 25,328 | 12,509 | 37,837 |
| Non-Road Engineering | 7,600 | 4,098 | 11,698 | 7,954 | 4,291 | 12,245 | 8,000 | 4,315 | 12,315 | 8,082 | 4,360 | 12,442 |
| All Construction | 38,293 | 20,053 | 58,346 | 40,349 | 21,130 | 61,479 | 40,617 | 21,268 | 61,885 | 40,704 | 21,317 | 62,021 |
| Other Uses nes | 3,564 | 4,356 | 7,920 | 3,123 | 3,816 | 6,939 | 2,953 | 3,610 | 6,563 | 3,033 | 3,708 | 6,741 |
| TOTAL DEMAND | 41,857 | 24,409 | 66,266 | 43,472 | 24,946 | 68,418 | 43,570 | 24,878 | 68,448 | 43,737 | 25,025 | 68,762 |
| SCENARIO A — Low | | | | | | | | | | | | |
| Low construction projection Construction category determined per Ontario average 1971-1977: | | | | | | | | | | | | |
| Residential Building | 3,085 | 1,827 | 4,912 | 3,103 | 1,838 | 4,941 | 3,104 | 1,839 | 4,943 | 3,209 | 1,901 | 5,110 |
| Non-Residential Building | 3,568 | 2,230 | 5,798 | 3,832 | 2,395 | 6,227 | 3,832 | 2,395 | 6,227 | 3,714 | 2,320 | 6,034 |
| Road Engineering | 23,102 | 11,409 | 34,511 | 24,298 | 12,001 | 36,299 | 24,298 | 12,001 | 36,299 | 24,029 | 11,868 | 35,897 |
| Non-Road Engineering | 7,371 | 3,975 | 11,346 | 7,662 | 4,133 | 11,795 | 7,662 | 4,133 | 11,795 | 7,672 | 4,138 | 11,810 |
| All Construction | 37,126 | 19,441 | 56,567 | 38,895 | 20,367 | 59,262 | 38,896 | 20,368 | 59,264 | 38,624 | 20,227 | 58,851 |
| Other Uses nes | 3,564 | 4,356 | 7,920 | 3,123 | 3,816 | 6,939 | 2,953 | 3,610 | 6,563 | 3,033 | 3,708 | 6,741 |
| TOTAL DEMAND | 40,690 | 23,797 | 64,487 | 42,018 | 24,183 | 66,201 | 41,849 | 23,978 | 65,827 | 41,657 | 23,935 | 65,592 |

NOTE: Other uses, not elsewhere specified (nes) include uses of limestone in agricultural lime and industrial lime, aggregates exported, and aggregates used by non-reporting units such as cottages, small farms, etc.

TABLE 3 STATISTICAL PROJECTION OF DEMAND FOR MINERAL AGGREGATE IN CENTRAL ONTARIO ECONOMIC REGION, 1978-1981

(Thousands of Tonnes)

| SCENARIO B — High | 1978 S&G | 1978 Stone | 1978 Total | 1979 S&G | 1979 Stone | 1979 Total | 1980 S&G | 1980 Stone | 1980 Total | 1981 S&G | 1981 Stone | 1981 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High construction projection Construction category determined per Ontario trend 1971-1977: | | | | | | | | | | | | |
| Residential Building | 3,552 | 2,104 | 5,656 | 3,410 | 2,020 | 5,430 | 3,467 | 2,054 | 5,521 | 3,890 | 2,304 | 6,194 |
| Non-Residential Building | 2,984 | 1,865 | 4,849 | 3,199 | 1,999 | 5,198 | 3,063 | 1,915 | 4,978 | 2,742 | 1,714 | 4,456 |
| Road Engineering | 20,782 | 10,264 | 31,046 | 22,048 | 10,890 | 32,938 | 21,508 | 10,623 | 32,131 | 19,669 | 9,714 | 29,383 |
| Non-Road Engineering | 7,954 | 4,291 | 12,245 | 9,194 | 4,960 | 14,154 | 9,496 | 5,122 | 14,618 | 9,204 | 4,965 | 14,169 |
| All Construction | 35,272 | 18,524 | 53,796 | 37,851 | 19,869 | 57,720 | 37,534 | 19,714 | 57,248 | 35,505 | 18,697 | 54,202 |
| Other Uses nes | 5,167 | 2,753 | 7,920 | 4,527 | 2,412 | 6,939 | 4,282 | 2,281 | 6,563 | 4,398 | 2,343 | 6,741 |
| TOTAL DEMAND | 40,439 | 21,277 | 61,716 | 42,378 | 22,281 | 64,659 | 41,816 | 21,995 | 63,811 | 39,903 | 21,040 | 60,943 |
| SCENARIO B — Low | | | | | | | | | | | | |
| Low construction projection Construction category determined per Ontario trend 1971-1977: | | | | | | | | | | | | |
| Residential Building | 3,448 | 2,042 | 5,490 | 3,286 | 1,947 | 5,233 | 3,321 | 1,967 | 5,288 | 3,691 | 2,187 | 5,878 |
| Non-Residential Building | 2,896 | 1,810 | 4,706 | 3,081 | 1,926 | 5,007 | 2,936 | 1,835 | 4,771 | 2,601 | 1,626 | 4,227 |
| Road Engineering | 20,225 | 9,989 | 30,214 | 21,238 | 10,490 | 31,728 | 20,608 | 10,179 | 30,787 | 18,247 | 9,011 | 27,258 |
| Non-Road Engineering | 7,717 | 4,163 | 11,880 | 8,857 | 4,778 | 13,635 | 9,095 | 4,906 | 14,001 | 8,739 | 4,714 | 13,453 |
| All Construction | 34,286 | 18,004 | 52,290 | 36,462 | 19,141 | 55,603 | 35,960 | 18,887 | 54,847 | 33,278 | 17,538 | 50,816 |
| Other Uses nes | 4,650 | 2,478 | 7,128 | 4,074 | 2,171 | 6,245 | 3,854 | 2,053 | 5,907 | 3,957 | 2,109 | 6,066 |
| TOTAL DEMAND | 38,936 | 20,482 | 59,418 | 40,536 | 21,312 | 61,848 | 39,814 | 20,940 | 60,754 | 37,235 | 19,647 | 56,882 |

NOTE: Other uses, not elsewhere specified (nes) include uses of limestone in agricultural lime and industrial lime, aggregates exported, and aggregates used by non-reporting units such as cottages, small farms, etc.

## FORECASTING THE DEMAND FOR MINERAL AGGREGATES IN REGIONAL MUNICIPALITIES AND COUNTIES BY MICRO-STUDY AND STATISTICAL METHOD COMBINED

In forecasting a short-term demand for mineral aggregate in Regional Municipalities and Counties the underlying assumptions are:

a) the general validity of input factors as developed by Proctor and Redfern in the Central Ontario Aggregate Study for Building Construction and Non-Road Engineering Construction, and

b) the validity of the average and the trend ratio's of building permits for Central Ontario for aggregate's demand distribution purposes.

### FORECAST DEMAND FOR MINERAL AGGREGATE IN CENTRAL ONTARIO

(Millions of Tonnes)

| Year | High | Low | Medium | High | Low | Medium |
|---|---|---|---|---|---|---|
| | SCENARIO A | | | SCENARIO B | | |
| 1978 | 64.3 | 62.4 | 63.4 | 66.9 | 65.1 | 66.0 |
| 1979 | 67.2 | 65.2 | 66.2 | 69.8 | 67.8 | 68.8 |
| 1980 | 66.7 | 64.7 | 65.7 | 69.5 | 67.3 | 68.4 |
| 1981 | 69.5 | 67.5 | 68.5 | 72.3 | 70.0 | 71.2 |

### SCENARIO A

In Scenario A it was assumed that the breakdown of construction activity by type in Central Ontario during the years 1978 to 1981 will be approximately the same as the average proportion in the Province during the 1971-1978 period with the exception of road construction which was determined by the MTC-MNR micro-study.

### SCENARIO B

In Scenario B it was assumed that the construction by type in Central Ontario during the 1978-1981 period will follow the Ontario trend of the 1971-1978 period with the exception of road construction which was determined by the MTC-MNR micro-study.

The total demand for mineral aggregate in Central Ontario Economic Region is distributed to its constituent Regional Municipalities and Counties in the following manner:

a) Residential and Non-Residential Building demands for mineral aggregate are allocated on the basis of respective building permit ratios.

b) Assuming that Non-Road Engineering Construction is directly related to the total Building Construction, the suub-regional allocations are made on the basis of the distribution of total Building Construction in the Region.

c) The demand for mineral aggregate for Road Engineering Construction in each Regional Municipality and County is forecast on the basis of analyses of individual contracts for road building in these jurisdictions, capital budget forecast for provincial and municipal road building (assisted by the Province) and on estimates for unassisted road building in the municipalities of Central Ontario Economic Region. Since road construction uses vast quantities of aggregates, the Ministry of Transportation and Communications undertook a revision of input factors through an analysis of aggregate consumption in selected type-municipalities and a determination of the unit value of aggregate material specified in contracts for provincial road programmes.

The demand for mineral aggregate forecast for Regional Municipalities determined in a manner indicated above is shown in the following Tables No. 4-7.

TABLE 4
SCENARIO A — High

## DEMAND FORECAST FOR MINERAL AGGREGATE IN CENTRAL ONTARIO ECONOMIC REGION BY REGIONAL MUNICIPALITIES/COUNTIES, 1978-1981

High Construction Projection
Construction Mix per Ontario
Average in 1971-1977

| Regional Municipality/County | 1978 S&G | 1978 Stone | 1978 Total | 1979 S&G | 1979 Stone | 1979 Total | 1980 S&G | 1980 Stone | 1980 Total | 1981 S&G | 1981 Stone | 1981 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Thousands of Tonnes) | | | | | | | | | | | |
| Brant County | 1,001 | 410 | 1,411 | 1,166 | 477 | 1,643 | 1,478 | 575 | 2,053 | 1,701 | 663 | 2,364 |
| Dufferin County | 623 | 99 | 722 | 651 | 109 | 760 | 654 | 117 | 771 | 685 | 121 | 806 |
| Durham R.M. | 3,064 | 856 | 3,920 | 3,154 | 912 | 4,066 | 3,747 | 1,033 | 4,780 | 3,998 | 1,128 | 5,126 |
| Haldimand-Norfolk R.M. | 777 | 1,264 | 2,041 | 1,030 | 1,800 | 2,830 | 944 | 1,528 | 2,472 | 1,102 | 1,783 | 2,885 |
| Haliburton P. County | 771 | 23 | 794 | 760 | 23 | 783 | 809 | 23 | 832 | 820 | 23 | 843 |
| Halton R.M. | 1,250 | 1,946 | 3,196 | 1,535 | 3,191 | 4,726 | 1,297 | 2,138 | 3,435 | 1,473 | 2,597 | 4,070 |
| Hamilton-Wentworth R.M. | 1,581 | 2,459 | 4,040 | 1,556 | 2,213 | 3,769 | 1,756 | 3,012 | 4,768 | 1,841 | 3,161 | 5,002 |
| Muskoka R.M. | 1,312 | 588 | 1,900 | 1,710 | 762 | 2,472 | 1,250 | 567 | 1,817 | 1,371 | 616 | 1,987 |
| Niagara R.M. | 1,223 | 2,985 | 4,208 | 1,264 | 3,556 | 4,820 | 1,238 | 3,261 | 4,499 | 1,280 | 3,592 | 4,872 |
| Northumberland County | 1,097 | 139 | 1,236 | 1,092 | 144 | 1,236 | 1,227 | 150 | 1,377 | 1,277 | 158 | 1,435 |
| Peel R.M. | 4,207 | 2,182 | 6,389 | 4,246 | 2,216 | 6,462 | 5,338 | 2,701 | 8,039 | 5,737 | 2,956 | 8,693 |
| Peterborough County | 1,789 | 171 | 1,960 | 1,755 | 174 | 1,929 | 1,620 | 177 | 1,797 | 1,577 | 175 | 1,752 |
| Simcoe County | 1,968 | 712 | 2,680 | 1,928 | 700 | 2,628 | 1,845 | 685 | 2,530 | 1,823 | 682 | 2,505 |
| Metro. Toronto | 13,446 | 5,596 | 19,042 | 13,108 | 5,373 | 18,481 | 12,254 | 5,021 | 17,275 | 12,083 | 4,853 | 16,936 |
| Waterloo R.M. | 2,644 | 662 | 3,306 | 2,887 | 685 | 3,572 | 2,958 | 708 | 3,666 | 3,170 | 763 | 3,933 |
| Wellington County | 1,633 | 191 | 1,824 | 1,611 | 184 | 1,795 | 1,640 | 177 | 1,817 | 1,659 | 170 | 1,829 |
| Victoria County | 1,058 | 168 | 1,226 | 1,133 | 176 | 1,309 | 1,212 | 188 | 1,400 | 1,298 | 197 | 1,495 |
| York R.M. | 3,226 | 1,176 | 4,402 | 2,812 | 1,060 | 3,872 | 2,469 | 881 | 3,350 | 2,173 | 812 | 2,985 |
| Central Ontario Economic Region TOTAL | 42,670 | 21,627 | 64,297 | 43,398 | 23,755 | 67,153 | 43,736 | 22,942 | 66,678 | 45,068 | 24,450 | 69,518 |

TABLE 5
SCENARIO A — Low

## DEMAND FORECAST FOR MINERAL AGGREGATE IN CENTRAL ONTARIO ECONOMIC REGION BY REGIONAL MUNICIPALITIES/COUNTIES, 1978-1981

Low Construction Projection
Construction Mix per Ontario
Average in 1971-1977

| Regional Municipality/County | 1978 S&G | 1978 Stone | 1978 Total | 1979 S&G | 1979 Stone | 1979 Total | 1980 S&G | 1980 Stone | 1980 Total | 1981 S&G | 1981 Stone | 1981 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Thousands of Tonnes) | | | | | | | | | | | |
| Brant County | 991 | 404 | 1,395 | 1,151 | 469 | 1,620 | 1,460 | 566 | 2,026 | 1,679 | 652 | 2,331 |
| Dufferin County | 619 | 98 | 717 | 646 | 105 | 751 | 647 | 114 | 761 | 675 | 118 | 793 |
| Durham R.M. | 3,033 | 838 | 3,871 | 3,110 | 887 | 3,997 | 3,691 | 1,002 | 4,693 | 3,925 | 1,095 | 5,020 |
| Haldimand-Norfolk R.M. | 769 | 1,260 | 2,029 | 1,019 | 1,793 | 2,812 | 928 | 1,519 | 2,447 | 1,082 | 1,771 | 2,853 |
| Haliburton P. County | 769 | 21 | 790 | 758 | 21 | 779 | 807 | 21 | 828 | 813 | 25 | 838 |
| Halton R.M. | 1,173 | 1,987 | 3,160 | 1,505 | 3,173 | 4,678 | 1,260 | 2,123 | 3,383 | 1,397 | 2,622 | 4,019 |
| Hamilton-Wentworth R.M. | 1,553 | 2,446 | 3,999 | 1,519 | 2,195 | 3,714 | 1,713 | 2,987 | 4,700 | 1,782 | 3,138 | 4,920 |
| Muskoka R.M. | 1,306 | 587 | 1,893 | 1,703 | 758 | 2,461 | 1,241 | 563 | 1,804 | 1,345 | 605 | 1,950 |
| Niagara R.M. | 1,200 | 2,973 | 4,173 | 1,234 | 3,539 | 4,773 | 1,202 | 3,243 | 4,445 | 1,241 | 3,567 | 4,808 |
| Northumberland County | 1,093 | 136 | 1,229 | 1,086 | 141 | 1,227 | 1,220 | 147 | 1,367 | 1,266 | 157 | 1,423 |
| Peel R.M. | 4,141 | 2,143 | 6,284 | 4,152 | 2,162 | 6,314 | 5,223 | 2,636 | 7,859 | 5,592 | 2,881 | 8,473 |
| Peterborough County | 1,782 | 166 | 1,948 | 1,745 | 168 | 1,913 | 1,608 | 171 | 1,779 | 1,562 | 168 | 1,730 |
| Simcoe County | 1,951 | 703 | 2,654 | 1,906 | 688 | 2,594 | 1,819 | 670 | 2,489 | 1,793 | 663 | 2,456 |
| Metro. Toronto | 12,630 | 5,136 | 17,766 | 12,373 | 4,950 | 17,323 | 11,612 | 4,624 | 16,236 | 11,514 | 4,501 | 16,015 |
| Waterloo R.M. | 2,620 | 647 | 3,267 | 2,853 | 666 | 3,519 | 2,917 | 685 | 3,602 | 3,122 | 734 | 3,856 |
| Wellington County | 1,624 | 187 | 1,811 | 1,601 | 179 | 1,780 | 1,629 | 170 | 1,799 | 1,645 | 164 | 1,809 |
| Victoria County | 1,054 | 166 | 1,220 | 1,129 | 174 | 1,303 | 1,207 | 185 | 1,392 | 1,293 | 193 | 1,486 |
| York R.M. | 3,067 | 1,085 | 4,152 | 2,645 | 947 | 3,592 | 2,263 | 814 | 3,077 | 1,966 | 734 | 2,700 |
| Central Ontario Economic Region TOTAL | 41,375 | 20,983 | 62,358 | 42,135 | 23,015 | 65,150 | 42,447 | 22,240 | 64,687 | 43,692 | 23,788 | 67,480 |

TABLE 6
SCENARIO B — High

## DEMAND FORECAST FOR MINERAL AGGREGATE IN CENTRAL ONTARIO ECONOMIC REGION BY REGIONAL MUNICIPALITIES/COUNTIES, 1978-1981

High Construction Projection
Construction Mix per Ontario
Trend in 1971-1977

| Regional Municipality/County | 1978 S&G | 1978 Stone | 1978 Total | 1979 S&G | 1979 Stone | 1979 Total | 1980 S&G | 1980 Stone | 1980 Total | 1981 S&G | 1981 Stone | 1981 Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Thousands of Tonnes) | | | | | | | | | | | |
| Brant County | 1,018 | 418 | 1,436 | 1,191 | 490 | 1,681 | 1,513 | 594 | 2,107 | 1,743 | 689 | 2,432 |
| Dufferin County | 627 | 102 | 729 | 658 | 112 | 770 | 663 | 122 | 785 | 692 | 131 | 823 |
| Durham R.M. | 3,133 | 892 | 4,025 | 3,252 | 963 | 4,215 | 3,878 | 1,102 | 4,980 | 4,185 | 1,187 | 5,372 |
| Haldimand-Norfolk R.M. | 781 | 1,265 | 2,046 | 1,035 | 1,800 | 2,835 | 948 | 1,529 | 2,477 | 1,106 | 1,783 | 2,889 |
| Haliburton P. County | 773 | 24 | 797 | 764 | 25 | 789 | 813 | 25 | 838 | 824 | 26 | 850 |
| Halton R.M. | 1,265 | 1,952 | 3,217 | 1,562 | 3,202 | 4,764 | 1,323 | 2,147 | 3,470 | 1,467 | 2,649 | 4,116 |
| Hamilton-Wentworth R.M. | 1,608 | 2,466 | 4,074 | 1,586 | 2,221 | 3,807 | 1,787 | 3,019 | 4,806 | 1,876 | 3,166 | 5,042 |
| Muskoka R.M. | 1,320 | 593 | 1,913 | 1,721 | 766 | 2,487 | 1,263 | 574 | 1,837 | 1,386 | 624 | 2,010 |
| Niagara R.M. | 1,266 | 3,000 | 4,266 | 1,321 | 3,577 | 4,898 | 1,305 | 3,291 | 4,596 | 1,362 | 3,627 | 4,989 |
| Northumberland County | 1,104 | 143 | 1,247 | 1,102 | 150 | 1,252 | 1,239 | 157 | 1,396 | 1,298 | 160 | 1,458 |
| Peel R.M. | 4,328 | 2,242 | 6,570 | 4,409 | 2,297 | 6,706 | 5,549 | 2,808 | 8,357 | 5,991 | 3,086 | 9,077 |
| Peterborough County | 1,803 | 178 | 1,981 | 1,774 | 182 | 1,956 | 1,645 | 189 | 1,834 | 1,601 | 195 | 1,796 |
| Simcoe County | 2,001 | 729 | 2,730 | 1,971 | 722 | 2,693 | 1,899 | 712 | 2,611 | 1,888 | 713 | 2,601 |
| Metro. Toronto | 13,811 | 5,794 | 19,605 | 13,474 | 5,571 | 19,045 | 12,620 | 5,219 | 17,839 | 12,425 | 5,075 | 17,500 |
| Waterloo R.M. | 2,682 | 680 | 3,362 | 2,934 | 708 | 3,642 | 3,012 | 738 | 3,750 | 3,233 | 798 | 4,031 |
| Wellington County | 1,643 | 196 | 1,839 | 1,624 | 189 | 1,813 | 1,653 | 182 | 1,835 | 1,673 | 176 | 1,849 |
| Victoria County | 1,065 | 172 | 1,237 | 1,144 | 182 | 1,326 | 1,225 | 195 | 1,420 | 1,314 | 206 | 1,520 |
| York R.M. | 4,131 | 1,661 | 5,792 | 3,665 | 1,503 | 5,168 | 3,191 | 1,335 | 4,526 | 2,793 | 1,191 | 3,984 |
| Central Ontario Economic Region TOTAL | 44,359 | 22,507 | 66,866 | 45,187 | 24,660 | 69,847 | 45,526 | 23,938 | 69,464 | 46,857 | 25,482 | 72,339 |

TABLE 7
SCENARIO B — Low

## DEMAND FORECAST FOR MINERAL AGGREGATE IN CENTRAL ONTARIO ECONOMIC REGION BY REGIONAL MUNICIPALITIES/COUNTIES, 1978-1981

Low Construction Projection
Construction Mix per Ontario
Trend in 1971-1977

| Regional Municipality/County | 1978 | | | 1979 | | | 1980 | | | 1981 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S&G | Stone | Total | S&G | Stone | Total | S&G | Stone | Total | S&G | Stone | Total |
| | (Thousands of Tonnes) | | | | | | | | | | | |
| Brant County | 1,008 | 413 | 1,421 | 1,175 | 481 | 1,656 | 1,494 | 583 | 2,077 | 1,715 | 679 | 2,394 |
| Dufferin County | 624 | 99 | 723 | 653 | 108 | 761 | 656 | 119 | 775 | 689 | 122 | 811 |
| Durham R.M. | 3,101 | 873 | 3,974 | 3,204 | 936 | 4,140 | 3,816 | 1,067 | 4,883 | 4,107 | 1,145 | 5,252 |
| Haldimand-Norfolk R.M. | 773 | 1,260 | 2,033 | 1,023 | 1,793 | 2,816 | 933 | 1,519 | 2,452 | 1,086 | 1,772 | 2,858 |
| Haliburton P. County | 772 | 24 | 796 | 762 | 24 | 786 | 811 | 25 | 836 | 822 | 26 | 848 |
| Halton R.M. | 1,190 | 1,993 | 3,183 | 1,532 | 3,185 | 4,717 | 1,286 | 2,130 | 3,416 | 1,424 | 2,627 | 4,051 |
| Hamilton-Wentworth R.M. | 1,577 | 2,454 | 4,031 | 1,544 | 2,204 | 3,748 | 1,740 | 2,995 | 4,735 | 1,814 | 3,142 | 4,956 |
| Muskoka R.M. | 1,315 | 590 | 1,905 | 1,714 | 762 | 2,476 | 1,253 | 569 | 1,822 | 1,373 | 618 | 1,991 |
| Niagara R.M. | 1,238 | 2,991 | 4,229 | 1,289 | 3,558 | 4,847 | 1,268 | 3,270 | 4,538 | 1,317 | 3,602 | 4,919 |
| Northumberland County | 1,100 | 140 | 1,240 | 1,097 | 146 | 1,243 | 1,233 | 154 | 1,387 | 1,286 | 161 | 1,447 |
| Peel R.M. | 4,258 | 2,202 | 6,460 | 4,310 | 2,241 | 6,551 | 5,425 | 2,738 | 8,163 | 5,834 | 3,006 | 8,840 |
| Peterborough County | 1,796 | 172 | 1,968 | 1,762 | 177 | 1,939 | 1,631 | 182 | 1,813 | 1,584 | 187 | 1,771 |
| Simcoe County | 1,976 | 726 | 2,702 | 1,947 | 709 | 2,656 | 1,870 | 696 | 2,566 | 1,851 | 696 | 2,547 |
| Metro. Toronto | 13,079 | 5,399 | 18,478 | 12,741 | 5,175 | 17,916 | 11,887 | 4,823 | 16,710 | 11,717 | 4,653 | 16,370 |
| Waterloo R.M. | 2,657 | 665 | 3,322 | 2,899 | 687 | 3,586 | 2,976 | 714 | 3,690 | 3,190 | 769 | 3,959 |
| Wellington County | 1,634 | 191 | 1,825 | 1,612 | 184 | 1,796 | 1,642 | 175 | 1,817 | 1,660 | 169 | 1,829 |
| Victoria County | 1,062 | 170 | 1,232 | 1,139 | 179 | 1,318 | 1,220 | 192 | 1,412 | 1,306 | 203 | 1,509 |
| York R.M. | 3,970 | 1,569 | 5,539 | 3,466 | 1,389 | 4,855 | 2,982 | 1,216 | 4,198 | 2,554 | 1,057 | 3,611 |
| Central Ontario Economic Region TOTAL | 43,130 | 21,931 | 65,061 | 43,869 | 23,938 | 67,807 | 44,123 | 23,167 | 67,290 | 45,329 | 24,634 | 69,963 |

## FORECAST CONTROL

The forecast control of estimating the cost of building construction and breaking-up the total cost of the construction by category is based on the value of building permits issued for the building construction. It has been assumed that the 1971-1977 ratio of the value of building permits in Ontario to the actual cost of building construction is sufficiently valid for estimating the cost of building construction in Central Ontario Economic Region for the 1978-1980 period.

The road engineering construction is estimated from Ministry of Transportation and Communications data and the non-road engineering construction is determined on the basis of its historical relationship to total building construction. The value of Residential and NonResidential Building Construction for Central Ontario is estimated from the projected value of Central Ontario building permits adjusted by the appropriate ratios of Ontario's value of building permits to its cost of construction.

### ESTIMATED VALUE OF BUILDING PERMITS AND COST OF BUILDING CONSTRUCTION IN CENTRAL ONTARIO ECONOMIC REGION, 1978-1980

| Year | Forecast Value of Permits | Ratio of Permits to Cost of Construction | Estimated Value of Construction |
|---|---|---|---|
| | (1971 Constant Dollars in Thousands) | | |
| Residential Building | | | |
| 1978 | 1,046,429 | 71.9 | 1,455,395 |
| 1979 | 1,027,594 | 69.3 | 1,482,820 |
| 1980 | 1,008,759 | 67.4 | 1,496,675 |
| Non-Residential Building | | | |
| 1978 | 660,195 | 93.2 | 708,364 |
| 1979 | 624,008 | 86.4 | 722,231 |
| 1980 | 587,829 | 86.3 | 681,146 |

The value of Non-Road Engineering Construction is estimated on a ratio basis of Non-Road Engineering Construction Expenditures in the 1971-1977 period to the total value of both Residential and Non-Residential Building Construction in that period. This calculated ratio, averaging 0.396 of expenditure on Building Construction in the 1971-1977 period, is applied to the estimated above values of total Building Construction in the years 1978 to 1980 to yield an estimated value of Non-Road Engineering Construction. This approach to forecasting assumes that Non-Road Engineering Construction is a complementary service activity directly related to Residential and Non-Residential Building Construction.

| Year | Total Building Construction | Ratio | Estimated Value of Non-Road Engineering |
|---|---|---|---|
| | (1971 Constant Dollars in Thousands) | | |
| Non-Road Engineering | | | |
| 1978 | 2,163,759 | 0.396 | 856,849 |
| 1979 | 2,205,141 | 0.396 | 873,236 |
| 1980 | 2,177,821 | 0.396 | 862,417 |
| | **Total Road Construction** | | |
| | (Determined by a micro-study) | | |
| 1978 | | | 239,184 |
| 1979 | | | 271,245 |
| 1980 | | | 273,164 |

Other than for construction purposes, uses of mineral aggregate in Central Ontario have been estimated on a per capita basis of the difference between the past production of the aggregates and its consumption by the construction activity in Ontario.

## DEMAND FORECAST FOR MISCELLANEOUS USES OF MINERAL AGGREGATE IN CENTRAL ONTARIO, 1978-1981

| Regional Municipalities / Counties | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | (Thousands of Tonnes) | | | |
| Durham | 87 | 76 | 72 | 74 |
| Haldimand-Norfolk | 55 | 49 | 46 | 47 |
| Halton | 388 | 340 | 322 | 333 |
| Muskoka | 63 | 56 | 53 | 54 |
| Niagara | 602 | 527 | 499 | 512 |
| Peel | 650 | 569 | 538 | 553 |
| Waterloo | 483 | 423 | 400 | 411 |
| Hamilton-Wentworth | 673 | 590 | 558 | 573 |
| York | 725 | 635 | 601 | 617 |
| Brant | 166 | 146 | 138 | 142 |
| Dufferin | 48 | 42 | 39 | 40 |
| Haliburton | 16 | 14 | 13 | 13 |
| Northumberland | 87 | 76 | 72 | 74 |
| Peterborough | 158 | 139 | 131 | 135 |
| Simcoe | 348 | 305 | 289 | 297 |
| Victoria | 71 | 62 | 59 | 61 |
| Wellington | 206 | 181 | 171 | 175 |
| Toronto | 3,094 | 2,709 | 2,562 | 2,693 |
| TOTAL | 7,920 | 6,939 | 6,563 | 6,741 |

TABLE 8

## CONTROL OF DEMAND FORECAST FOR MINERAL AGGREGATES IN CENTRAL ONTARIO ECONOMIC REGION, 1978-1980

| | 1978 | | | 1979 | | | 1980 | | |
|---|---|---|---|---|---|---|---|---|---|
| | S&G | Stone | Total | S&G | Stone | Total | S&G | Stone | Total |
| Residential Building | 3,617,564 | 2,142,889 | 5,760,453 | 3,685,734 | 2,183,268 | 5,869,002 | 3,720,172 | 2,203,668 | 5,923,840 |
| Non-Residential Building | 3,110,933 | 1,947,494 | 5,058,427 | 3,171,833 | 1,985,619 | 5,157,452 | 2,991,399 | 1,872,665 | 4,864,064 |
| Non-Road Engineering | 7,821,275 | 4,211,456 | 12,032,731 | 7,970,854 | 4,291,998 | 12,262,853 | 7,872,099 | 4,238,823 | 12,110,922 |
| Road Engineering | 22,475,459 | 10,258,022 | 32,733,481 | 23,783,144 | 12,618,656 | 36,401,800 | 24,257,488 | 11,952,098 | 36,209,586 |
| TOTAL CONSTRUCTION | 37,025,231 | 18,559,861 | 55,585,092 | 38,611,565 | 21,079,541 | 59,691,107 | 38,841,158 | 20,267,254 | 59,108,412 |
| OTHER USES n.e.s. | 5,306,400 | 2,613,600 | 7,920,000 | 4,488,535 | 2,450,465 | 6,939,000 | 4,312,661 | 2,250,339 | 6,563,000 |
| TOTAL DEMAND | 42,331,631 | 21,173,461 | 63,505,092 | 43,100,100 | 23,530,006 | 66,630,106 | 43,153,819 | 22,517,593 | 65,671,412 |

## SOUTHWESTERN ONTARIO ECONOMIC REGION

The methodology used in forecasting the short-term demand for mineral aggregate in Southwestern Ontario Economic Region was developed in the pilot study prepared for Central Ontario Economic Region.

The study area comprises the following counties:

| | |
|---|---|
| Bruce | Kent |
| Elgin | Lambton |
| Essex | Middlesex |
| Grey | Oxford |
| Huron | Perth |

Estimated demand for mineral aggregate for London, Windsor and Sarnia areas prepared by Consultants Peat Marwick et al for The Bulk Transportation Study was of material assistance in forecasting the regional short-term demand for this commodity.

The total demand for mineral aggregate in Southwestern Ontario Economic Region in the two developed scenarios is forecast in the following ranges:

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | (Thousands of Tonnes) | | |
| High expectation | 16,157.5 | 15,831.1 | 15,907.0 | 16,102.5 |
| Low expectation | 15,352.1 | 14,286.7 | 14,143.0 | 14,267.8 |

### ESTIMATED GROSS INCOME/CAPITA IN SOUTHWESTERN ONTARIO ECONOMIC REGION

(1971 Constant Dollars)

| Year | Per MRI Index | Per IRI Index | Ontario Average |
|---|---|---|---|
| 1971 | 4,595 | 4,051 | 4,946 |
| 1972 | 5,398 | 4,523 | 5,266 |
| 1973 | 5,327 | 4,800 | 5,549 |
| 1974 | 5,470 | 5,032 | 5,692 |
| 1975 | 5,209 | 4,705 | 5,420 |
| 1976 | 5,621 | 5,295 | 5,621 |
| 1977 | 5,621 | 5,320 | 5,795 |
| **Average** 1971-77 | 5,621 | 5,308 | 5,708 |
| **Average** 1976-77 | 5,320 | 4,818 | 5,470 |
| 1978 | 5,743 | 5,548 | 5,890 |
| 1979 | 5,745 | 5,634 | 5,893 |
| 1980 | 5,920 | 5,859 | 6,072 |
| 1981 | 6,091 | 6,091 | 6,247 |

The estimated and projected Gross Regional Income per capita adjusted by the Market Rating Index, and the projection adjusted by the Income Rating Index represent the low-end and the high-end of the range. It is felt that a realistic estimate of gross income per capita would be in mid-range of the two estimates, namely: 1978 — $5,645.5, 1979 — $5,689.5, 1980 — $5,889.5, 1981 —$6,091.0.

## MARKET AND INCOME RATING INDEXES
## SOUTHWESTERN ONTARIO ECONOMIC REGION

| Year | Market Rating Index (MRI) | Income Rating Index (IRI) | Market Attraction Index (MAI) |
|---|---|---|---|
| **Ontario** | 100 | 100 | 1.00 |
| **Southwestern Ontario Study Area** | | | |
| 1971 | 92.9 | 81.9 | 1.13 |
| 1972 | 102.5 | 85.9 | 1.19 |
| 1973 | 96.0 | 86.5 | 1.11 |
| 1974 | 96.1 | 88.4 | 1.09 |
| 1975 | 96.1 | 86.8 | 1.11 |
| 1976 | 100.0 | 94.2 | 1.06 |
| 1977 | 97.0 | 91.8 | 1.06 |
| 1978 | 97.5 | 94.2 | 1.04 |
| 1979 | 97.5 | 95.6 | 1.02 |
| 1980 | 97.5 | 96.5 | 1.01 |
| 1981 | 97.5 | 97.5 | 1.00 |
| **Average** 1971-1977 | 97.2 | 87.9 | 1.11 |
| **Average** 1976-1977 | 98.5 | 93.0 | 1.06 |

The preceding market and income rating indexes when applied to the Ontario gross income per capita yield the following alternative estimates for Gross Area Income per capita in the Southwestern Ontario Economic Region.

**Gross Regional Product** estimates are calculated by applying alternative estimates of gross income per capita to estimated population in the Southwestern Ontario Economic Region for the 1978-1981 period.

GROSS REGIONAL PRODUCT OF SOUTHWESTERN ONTARIO, 1978-1981

| Year | MRI-Basis | IRI-Basis | MRI-IRI Mid-point | Population No. |
|---|---|---|---|---|
| 1978 | 7,281,831,107 | 7,034,581,052 | 7,158,206,080 | 1,267,949 |
| 1979 | 7,344,040,320 | 7,202,145,024 | 7,273,092,670 | 1,278,336 |
| 1980 | 7,629,216,480 | 7,550,604,621 | 7,589,910,550 | 1,288,719 |
| 1981 | 7,903,614,599 | 7,903,614,599 | 7,903,614,599 | 1,297,589 |

CONSTRUCTION EXPENDITURE FORECAST
SOUTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| Gross Area Product | (1971 Constant Dollars in Millions) | | | |
| IRI — High Alternative | 7,282 | 7,344 | 7,629 | 7,904 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 721 | 734 | 742 | 751 |
| Estimated Construction Expenditure adjusted by Southwestern Ontario Market Attraction Index, 1976-1977 average | 764 | 778 | 787 | 796 |
| Gross Area Product MRI — Low alternative | 7,035 | 7,202 | 7,551 | 7,904 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 696 | 720 | 734 | 751 |
| Estimated Construction Expenditure adjusted by Southwestern Ontario Market Attraction Index, 1976-1977 average | 738 | 763 | 778 | 796 |

The high and low alternative forecasts of construction expenditures for Southwestern Ontario Economic Region in the 1978-1981 period, adjusted by the pull of the market, are as follows:

| Year | High | Low | Mid-point |
|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | |
| 1978 | 764 | 738 | 752 |
| 1979 | 778 | 763 | 771 |
| 1980 | 787 | 778 | 782 |
| 1981 | 796 | 796 | 796 |

Disaggregation of the forecast of sub-provincial construction expenditures into types of construction is difficult because of lack of adequate statistics at this level of disaggregation.

It is noted, however, that the average share of each identifiable type of construction in the total new construction expenditure during the 1971-1978 period in Ontario was as follows:

| Type of Construction | Ontario's average 1971-1978 |
|---|---|
| | % |
| 1. Residential Building | 39.9 |
| 2. Non-Residential Building | 26.1 |
| 3. Roads, Hwys., Aerodrome | 8.0 |
| 4. Non-Road Engineering | 26.0 |

## SCENARIO A

Scenario A assumes that the share of construction by type in Southwestern Ontario Region to the total construction during the 1978-1981 period would be approximately the same as the average share in the Province during the 1971-1978 period. The projected expenditures on construction by type in high and low expectation are presented in Table 1.

## SCENARIO B

The scenario assumes that the construction by type in Southwestern Ontario Economic Region during the 1978-1981 period might follow the Ontario trend of the 1971-1978 period and would give the following distribution:

| Type of Construction | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | (%) | | |
| 1. Residential Building | 38.7 | 44.1 | 45.0 | 45.9 |
| 2. Non-Residential Building | 27.0 | 20.7 | 19.5 | 18.3 |
| 3. Road Engineering | 8.3 | 6.7 | 6.4 | 6.2 |
| 4. Non-Road Engineering | 26.0 | 28.5 | 29.1 | 29.6 |

The trend indicates that substantial changes had occurred in the construction mix as compared with the average construction mix of the 1971-1978 period. Under this assumption, the high and low estimated expenditures on construction by type in Southwestern Ontario Region for the years 1978 through 1981 are presented in Table 2.

CONSTRUCTION EXPENDITURES ESTIMATE FOR SOUTHWESTERN ONTARIO ECONOMIC REGION

TABLE 1

SCENARIO A — Type of construction determined per Ontario average in 1971-1978

| Type of Construction | 1978 High | 1978 Low | 1978 Mid-Point | 1979 High | 1979 Low | 1979 Mid-Point | 1980 High | 1980 Low | 1980 Mid-Point | 1981 High | 1981 Low | 1981 Mid-Point |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | | | | | | | | | |
| 1. Residential Building | 304.8 | 294.4 | 299.6 | 310.4 | 304.4 | 307.4 | 324.4 | 310.4 | 312.2 | 317.6 | 317.6 | 317.6 |
| 2. Non-Residential Building | 199.4 | 192.6 | 196.0 | 203.1 | 199.1 | 201.1 | 205.4 | 203.1 | 204.3 | 207.8 | 207.8 | 207.8 |
| 3. Roads, Hwys., Aerodrome | 61.1 | 59.0 | 60.0 | 62.2 | 61.0 | 61.6 | 63.0 | 62.2 | 62.6 | 63.7 | 63.7 | 63.7 |
| 4. Non-Roads Engineering | 198.0 | 192.0 | 195.4 | 202.3 | 198.5 | 200.4 | 204.6 | 202.3 | 203.4 | 206.9 | 206.9 | 206.9 |
| TOTAL CONSTRUCTION | 764.0 | 738.0 | 751.0 | 778.0 | 763.0 | 770.5 | 787.0 | 778.0 | 782.5 | 796.0 | 796.0 | 796.0 |

## CONSTRUCTION EXPENDITURES ESTIMATE FOR SOUTHWESTERN ONTARIO ECONOMIC REGION BY TYPE OF CONSTRUCTION, 1978-1981

TABLE 2

SCENARIO B — Type of construction determined per Ontario trend in 1978-1981

| Type of Construction | 1978 | | | 1979 | | | 1980 | | | 1981 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High | Low | Mid-Point | High | Low | Mid-Point | High | Low | Mid-Point | High | Low | Mid-Point |
| | (1971 Constant Dollars in Millions) | | | | | | | | | | | |
| 1. Residential Building | 295.7 | 285.6 | 290.7 | 343.1 | 336.5 | 339.8 | 354.1 | 350.1 | 352.1 | 365.4 | 365.4 | 365.4 |
| 2. Non-Residential Building | 206.3 | 199.3 | 202.8 | 161.1 | 175.9 | 159.5 | 153.5 | 151.7 | 152.6 | 145.7 | 145.7 | 145.7 |
| 3. Roads, Hwys., Aerodrome | 63.4 | 61.3 | 62.8 | 52.1 | 51.1 | 51.6 | 50.4 | 49.8 | 50.1 | 49.4 | 49.4 | 49.4 |
| 4. Non-Roads Engineering | 198.6 | 191.9 | 195.2 | 221.7 | 217.5 | 219.6 | 229.0 | 226.4 | 227.7 | 235.5 | 235.5 | 235.5 |
| TOTAL CONSTRUCTION | 764.0 | 738.0 | 751.0 | 778.0 | 763.0 | 770.5 | 787.0 | 778.0 | 782.5 | 796.0 | 796.0 | 796.0 |

TABLE 3

DEMAND FOR MINERAL AGGREGATE, SOUTHWESTERN ONTARIO ECONOMIC REGION
1978-1981

SCENARIO A

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Residential Building | 1,206.4 | 1,165.2 | 1,228.6 | 1,204.8 | 1,242.8 | 1,228.6 | 1,257.1 | 1,257.1 |
| Non-Residential Building | 1,423.9 | 1,375.4 | 1,450.3 | 1,421.8 | 1,466.8 | 1,450.3 | 1,483.9 | 1,483.9 |
| Roads, Highways, Aerodrome | 8,468.5 | 8,177.4 | 8,620.9 | 8,454.6 | 8,731.8 | 8,620.8 | 8,828.8 | 8,828.8 |
| Non-Road Engineering | 2,790.3 | 2,696.3 | 2,840.9 | 2,787.5 | 2,873.2 | 2,840.9 | 2,905.5 | 2,905.5 |
| Total Construction | 13,889.1 | 13,414.3 | 14,140.7 | 13,868.7 | 14,314.6 | 14,140.7 | 14,475.3 | 14,475.3 |
| Other Uses n.e.s. | 1,937.8 | 1,937.8 | 1,690.4 | 1,690.4 | 1,592.4 | 1,592.4 | 1,627.2 | 1,627.2 |
| TOTAL DEMAND | 15,826.9 | 15,352.1 | 15,831.1 | 15,559.1 | 15,907.0 | 15,733.1 | 16,102.5 | 16,102.5 |

Scenario A = Type of construction determined per adjusted Ontario Average, 1971-1978

TABLE 4

DEMAND FOR MINERAL AGGREGATE, SOUTHWESTERN ONTARIO ECONOMIC REGION
1978-1981

SCENARIO B

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Residential Building | 1,170.4 | 1,130.4 | 1,358.0 | 1,331.9 | 1,401.5 | 1,385.7 | 1,446.3 | 1,446.3 |
| Non-Residential Building | 1,473.2 | 1,423.2 | 1,150.4 | 1,127.6 | 1,096.1 | 1,083.3 | 1,040.4 | 1,040.4 |
| Roads, Highways, Aerodrome | 8,787.2 | 8,496.2 | 7,221.1 | 7,082.5 | 6,985.4 | 6,902.3 | 6,846.8 | 6,846.8 |
| Non-Road Engineering | 2,788.9 | 2,694.9 | 3,113.3 | 3,054.3 | 3,215.8 | 3,179.3 | 3,307.1 | 3,307.1 |
| Total Construction | 14,219.7 | 13,744.7 | 12,842.8 | 12,596.3 | 12,698.8 | 12,550.6 | 12,640.6 | 12,640.6 |
| Other Uses n.e.s. | 1,937.8 | 1,937.8 | 1,690.4 | 1,690.4 | 1,592.4 | 1,592.4 | 1,627.2 | 1,627.2 |
| TOTAL DEMAND | 16,157.5 | 15,682.5 | 14,533.2 | 14,286.7 | 14,291.2 | 14,143.0 | 14,267.8 | 14,267.8 |

Scenario B = Type of construction projected per adjusted Ontario trend, 1971-1978

## DEMAND FORECAST FOR MINERAL AGGREGATE IN COUNTIES

Demand for mineral aggregate in Southwestern Economic Region is distributed to Counties in the following manner:

a) Residential and Non-Residential Building demand is allocated on the basis of building permit ratios.

b) Assuming that Non-Road Engineering Construction is directly related to the total Building Construction, the sub-regional allocations are made on the basis of distribution of the total Building Construction in the Region.

c) The demand for road engineering in Southwestern Ontario Economic Region was estimated with the assistance of a detailed study done by consultants Peat Marwick et al for the London, Sarnia and Windsor areas in The Mineral Aggregate Transportation Study (Exhibit 3-13-14-15 on pages 25 and 26).

Since the London area comprises the counties of Middlesex and Elgin, a part of the demand for mineral aggregate for this area was allocated to Elgin County on the basis of the aggregate production in the county and the estimated demand for building construction and non-road engineering. The balance of the demand for road-aggregate was credited to Middlesex County.

Subsequently, the demand for the four counties determined by the micro-study was subtracted from the total estimated demand for aggregates for road construction in the Region, and the balance was allocated to the remaining six counties on the basis of their respective areas and their road system networks.

The demand for mineral aggregate for other uses than construction has been estimated on a per capita basis. The total demand forecast in Scenarios A and B for each County in Southwestern Ontario Economic Region for the years 1978-1981 is detailed in Tables 5 and 6.

TABLE 5 SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATES,
SCENARIO A SOUTHWESTERN ONTARIO ECONOMIC REGION BY COUNTIES, 1978-1981

| Counties | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Elgin | 684.5 | 664.9 | 592.7 | 578.8 | 622.7 | 609.9 | 627.0 | 627.0 |
| Essex | 3,207.1 | 3,114.6 | 3,724.9 | 3,649.2 | 3,053.6 | 3,004.8 | 3,212.0 | 3,212.0 |
| Lambton | 1,310.2 | 1,272.2 | 1,038.8 | 1,014.4 | 1,298.5 | 1,273.7 | 1,277.8 | 1,277.8 |
| Middlesex | 3,244.9 | 3,150.7 | 2,965.9 | 2,894.1 | 3,191.1 | 3,124.6 | 3,185.8 | 3,185.8 |
| Bruce | 1,372.7 | 1,328.5 | 1,321.7 | 1,312.7 | 1,436.8 | 1,434.5 | 1,450.3 | 1,450.3 |
| Grey | 1,599.1 | 1,546.0 | 1,650.2 | 1,632.2 | 1,689.0 | 1,686.0 | 1,698.7 | 1,698.7 |
| Huron | 1,137.9 | 1,099.9 | 1,118.1 | 1,111.8 | 1,174.3 | 1,172.5 | 1,180.3 | 1,180.3 |
| Kent | 1,293.6 | 1,254.7 | 1,279.7 | 1,253.4 | 1,334.5 | 1,329.0 | 1,348.7 | 1,348.7 |
| Oxford | 1,032.9 | 1,005.7 | 1,203.7 | 1,187.3 | 1,131.8 | 1,127.0 | 1,138.0 | 1,138.0 |
| Perth | 944.0 | 914.9 | 935.4 | 925.2 | 974.7 | 971.1 | 983.9 | 983.9 |
| TOTAL | 15,826.9 | 15,352.1 | 15,831.1 | 15,559.1 | 15,907.0 | 15,733.1 | 16,102.5 | 16,102.5 |

TABLE 6
SCENARIO B

SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATES, SOUTHWESTERN ONTARIO ECONOMIC REGION BY COUNTIES, 1978-1981

| Counties | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Bruce | 1,469.8 | 1,424.0 | 1,176.4 | 1,155.4 | 1,241.6 | 1,227.8 | 1,209.0 | 1,209.0 |
| Elgin | 963.8 | 935.2 | 774.1 | 761.1 | 792.4 | 784.0 | 789.3 | 789.3 |
| Essex | 2,961.4 | 2,877.9 | 3,416.1 | 3,358.6 | 2,714.7 | 2,688.0 | 2,866.0 | 2,866.0 |
| Grey | 1,699.5 | 1,643.8 | 1,486.1 | 1,459.4 | 1,456.8 | 1,440.7 | 1,421.4 | 1,421.4 |
| Huron | 1,222.4 | 1,184.7 | 991.3 | 973.8 | 994.1 | 983.3 | 966.9 | 966.9 |
| Kent | 1,357.4 | 1,317.6 | 1,190.9 | 1,170.7 | 1,209.5 | 1,196.8 | 1,201.2 | 1,201.2 |
| Lambton | 1,665.8 | 1,617.2 | 1,238.9 | 1,218.3 | 1,486.9 | 1,471.8 | 1,453.5 | 1,453.5 |
| Middlesex | 2,723.6 | 2,648.1 | 2,307.7 | 2,271.3 | 2,510.6 | 2,486.0 | 2,504.2 | 2,504.2 |
| Oxford | 1,093.3 | 1,060.5 | 1,095.4 | 1,076.5 | 1,022.5 | 1,011.8 | 1,006.6 | 1,006.6 |
| Perth | 1,001.1 | 970.5 | 856.3 | 841.6 | 862.1 | 852.8 | 849.7 | 849.7 |
| TOTAL | 16,157.5 | 15,682.5 | 14,533.2 | 14,286.7 | 14,291.2 | 14,143.0 | 14,267.8 | 14,267.8 |

## FORECAST CONTROL

The forecast control of estimating the cost of building construction and of breaking-up the total cost of the construction by category is based on the value of building permits issued for the building construction. It is assumed that the 1971-1978 ratio of the value of building permits in Ontario to the actual cost of building construction is sufficiently valid for estimating the cost of building construction in Southwestern Ontario Region for the 1978-1981 period.

The value of Residential and Non-Residential Building Construction for Southwestern Ontario is estimated from the projected value of Southwestern Ontario building permits adjusted by the appropriate ratios of Ontario's value of building permits to the actual cost of construction.

The value of Non-Road Engineering Construction is estimated on a ratio basis of Non-Road Engineering Construction Expenditures in the 1971-1978 period to the total value of both Residential and Non-Residential Building Construction in that period. This calculated ratio, averaging 0.396:1 of expenditure on Building Construction in the 1971-1978 period, is applied to the estimated above values of total Building Construction in the years 1978 to 1981 to yield an estimated value of Non-Road Engineering Construction Expenditure. This approach to forecasting assumes that Non-Road Engineering Construction is a complementary service activity directly related to Residential and Non-Residential Building Construction.

The road engineering construction is determined on the basis of its historical average relationship to total building construction adjusted by the 1971-1978 trends.

## ESTIMATED VALUE OF BUILDING PERMITS AND COST OF BUILDING CONSTRUCTION IN SOUTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| Year | Forecast Value of Permits | Ratio of Permits to Cost of Construction | Estimated Value of Construction |
|---|---|---|---|
| | | (1971 Constant Dollars in Thousands) | |
| Residential Building | | | |
| 1978 | 211,783 | 71.9 | 294,552 |
| 1979 | 176.336 | 69.3 | 254,453 |
| 1980 | 198,627 | 67.4 | 294,699 |
| 1981 | 198,635 | 65.4 | 303,723 |
| Non-Residential Building | | | |
| 1978 | 122,948 | 93.2 | 131,918 |
| 1979 | 137,762 | 86.4 | 159,447 |
| 1980 | 122,616 | 86.3 | 142,081 |
| 1981 | 126,037 | 86.3 | 146,045 |

## ESTIMATED VALUE OF BUILDING PERMITS AND COST OF BUILDING CONSTRUCTION IN SOUTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981 (cont'd)

Non-Road Engineering

| Year | Total Building Construction | Ratio | Estimated Value of Non-Road Engineering |
|---|---|---|---|
| 1978 | 426,470 | 0.396 | 168,882 |
| 1979 | 413,900 | 0.396 | 163,904 |
| 1980 | 436,780 | 0.396 | 172,965 |
| 1981 | 449,768 | 0.396 | 178,108 |

**Total Road Construction**

The value of road construction was estimated as a percentage of total projected expenditures on construction.

| Year | Total Construction | Road Construction |
|---|---|---|
| | (1971 Constant Dollars in Thousands) | |
| 1978 | 764,000 | 61,900 (8.1) |
| 1979 | 778,000 | 57,600 (7.4) |
| 1980 | 787,000 | 56,700 (7.2) |
| 1981 | 796,000 | 56,500 (7.1) |

* figures in brackets represent % of Total Construction

The construction value by type multiplied by the input factors yields the demand for aggregate for construction in the Southwestern Ontario Region. In addition, uses of mineral aggregate in Southwestern Ontario Economic Region other than for construction purposes have been estimated on a per capita basis of the difference between the past production of the aggregates and its consumption by the construction activity in Ontario.

## DEMAND FORECAST FOR MISCELLANEOUS USES OF MINERAL AGGREGATE IN SOUTHWESTERN ONTARIO, 1978-1981

| Counties | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | | (Tonnes) | |
| Bruce | 90.3 | 79.1 | 74.9 | 80.4 |
| Elgin | 106.9 | 93.1 | 87.6 | 89.5 |
| Essex | 482.4 | 420.9 | 396.6 | 398.5 |
| Grey | 113.3 | 99.3 | 94.0 | 96.8 |
| Huron | 86.1 | 74.7 | 70.0 | 70.9 |
| Kent | 164.5 | 143.3 | 134.8 | 137.7 |
| Lambton | 188.9 | 165.5 | 156.5 | 158.2 |
| Middlesex | 470.3 | 409.6 | 385.2 | 397.6 |
| Oxford | 133.7 | 117.1 | 110.8 | 113.1 |
| Perth | 101.4 | 87.8 | 82.0 | 84.5 |
| TOTAL | 1,937.8 | 1,690.4 | 1,592.4 | 1,627.2 |

TABLE 7 CONTROL OF DEMAND FORECAST FOR MINERAL AGGREGATES IN SOUTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| | Residential Building | Non-Residential Building | Roads, Hwys., Aerodromes | Non-Road Engineering | Total Construction (x) |
|---|---|---|---|---|---|
| | | | (Tonnes) | | |
| 1978 | | | | | |
| Sand & Gravel | 636,547 | 514,346 | 4,684,320 | 1,294,899 | 7,130,112 |
| Stone | 529,290 | 427,680 | 3,895,020 | 1,076,711 | 5,928,701 |
| TOTAL | 1,165,837 | 942,026 | 8,579,340 | 2,371,610 | 13,058,813 |
| 1979 | | | | | |
| Sand & Gravel | 549,890 | 621,682 | 4,358,915 | 1,256,730 | 6,787,217 |
| Stone | 457,235 | 516,929 | 3,624,445 | 1,044,974 | 5,643,583 |
| TOTAL | 1,007,125 | 1,138,611 | 7,983,360 | 2,301,704 | 12,430,800 |
| 1980 | | | | | |
| Sand & Gravel | 636,865 | 553,972 | 4,290,807 | 1,326,205 | 6,807,848 |
| Stone | 529,554 | 460,628 | 3,567,813 | 1,102,742 | 5,660,738 |
| TOTAL | 1,166,419 | 1,014,600 | 7,858,620 | 2,428,947 | 12,468,586 |
| 1981 | | | | | |
| Sand & Gravel | 656,366 | 569,427 | 4,275,671 | 1,365,639 | 6,867,104 |
| Stone | 545,770 | 473,480 | 3,555,229 | 1,135,532 | 5,710,010 |
| TOTAL | 1,202,136 | 1,042,907 | 7,830,900 | 2,501,171 | 12,577,114 |

(x) does not include other uses n.e.s.

## DEMAND FORECAST FOR MINERAL AGGREGATE IN EASTERN ONTARIO ECONOMIC REGION

The methodology used in forecasting the short-term demand for mineral aggregate in Eastern Ontario Economic Region was developed in the pilot study prepared for Central Ontario Economic Region.

The study area comprises the following Regional Municipalities and Counties:

| | |
|---|---|
| Frontenac | Ottawa-Carleton |
| Hastings | Prescott & Russell |
| Lanark | Prince Edward |
| Leeds & Grenville | Renfrew |
| Lennox & Addington | Stormont, Dundas and Glengarry |

The total demand for mineral aggregate in Eastern Ontario Economic Region in the developed two scenarios is forecast in the following ranges:

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | (Thousands of Tonnes) | | |
| High Expectation | 14,544 | 13,860 | 14,073 | 14,238 |
| Low Expectation | 12,968 | 11,444 | 11,185 | 11,027 |

## ESTIMATED GROSS INCOME/CAPITA IN EASTERN ONTARIO ECONOMIC REGION

(1971 Constant Dollars)

| Year | Per MRI Index | Per IRI Index | Average Ontario |
|---|---|---|---|
| 1971 | 4,204 | 3,967 | 4,946 |
| 1972 | 4,924 | 4,423 | 5,266 |
| 1973 | 4,811 | 4,656 | 5,549 |
| 1974 | 4,935 | 4,787 | 5,692 |
| 1975 | 4,694 | 4,509 | 5,420 |
| 1976 | 4,975 | 4,508 | 5,621 |
| 1977 | 5,320 | 4,717 | 5,795 |
| **Average** 1971-1977 | 4,835 | 4,507 | 5,470 |
| **Average** 1976-1977 | 5,149 | 4,612 | 5,708 |
| 1978 | 5,219 | 4,677 | 5,890 |
| 1979 | 4,997 | 4,408 | 5,893 |
| 1980 | 5,204 | 4,524 | 6,072 |
| 1981 | 5,297 | 4,535 | 6,247 |

MARKET AND INCOME RATING INDEXES
EASTERN ONTARIO ECONOMIC REGION

| Year | Market Rating Index (MRI) | Income Rating Index (IRI) | Market Attraction Index (MAI) |
|---|---|---|---|
| **Ontario** | 100 | 100 | 1.00 |
| Eastern Ontario Study Area | | | |
| 1971 | 85.0 | 82.0 | 1.06 |
| 1972 | 93.5 | 84.0 | 1.11 |
| 1973 | 86.7 | 83.9 | 1.03 |
| 1974 | 86.7 | 84.1 | 1.03 |
| 1975 | 86.6 | 83.2 | 1.04 |
| 1976 | 88.5 | 80.2 | 1.10 |
| 1977 | 91.8 | 81.4 | 1.13 |
| 1978 | 88.6 | 79.4 | 1.12 |
| 1979 | 84.8 | 74.8 | 1.13 |
| 1980 | 85.7 | 74.5 | 1.15 |
| 1981 | 84.8 | 72.6 | 1.17 |
| **Average** 1971-1977 | 88.4 | 82.4 | 1.07 |
| **Average** 1976-1977 | 90.2 | 80.8 | 1.12 |

The preceding market and income rating indexes when applied to the Ontario gross income per capita yield the following alternative estimates for Gross Area Income per capita in the Eastern Ontario Economic Region.

The estimated and projected Gross Regional Income per capita adjusted by the Market Rating Index, and the projection adjusted by the Income Rating Index represent the low-end and the high-end of the range. It is felt that a realistic estimate of gross income per capita would be in mid-range of the two estimates, namely: 1978 — $5,645.5, 1979 — $5,689.5, 1980 — $5,889.5, 1981 —$6,091.0.

**Gross Regional Product** estimates are calculated by applying alternative estimates of gross income per capita to estimated population in the Southwestern Ontario Economic Region for the 1978-1981 period.

GROSS REGIONAL PRODUCT OF EASTERN ONTARIO, 1978-1981

| Year | MRI-Basis | IRI-Basis | MRI-IRI Mid-Point | Population No. |
|---|---|---|---|---|
| | | | (1971 Constant Dollars) | |
| 1978 | 6,173,497,691 | 5,532,371,853 | 5,852,934,770 | 1,182,889 |
| 1979 | 6,002,316,448 | 5,294,819,072 | 5,648,567,760 | 1,201,184 |
| 1980 | 6,346,179,124 | 5,516,932,044 | 5,931,555,585 | 1,219,481 |
| 1981 | 6,556,494,175 | 5,613,309,625 | 6,084,901,900 | 1,237,775 |

CONSTRUCTION EXPENDITURE FORECAST
EASTERN ONTARIO ECONOMIC REGION, 1978-1981

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| Gross Area Product | (1971 Constant Dollars in Millions) | | | |
| IRI-High Alternative | 6,173 | 6,002 | 6,346 | 6,556 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 611 | 600 | 617 | 623 |
| Estimated Construction Expenditure adjusted by Eastern Ontario Market Attraction Index, 1976-1977 average | 684 | 672 | 691 | 698 |
| Gross Area Product | | | | |
| MRI-Low Alternative | 5,532 | 5,295 | 5,517 | 5,613 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 548 | 530 | 536 | 533 |
| Estimated Construction Expenditure adjusted by Eastern Ontario Market Attraction Index, 1976-1977 average | 614 | 594 | 600 | 597 |

The high and low alternative forecasts of construction expenditures for Eastern Ontario Economic Region in the 1978-1981 period, adjusted by the pull of the market, are as follows:

| Year | High | Low |
|---|---|---|
| | (1971 Constant Dollars in Millions) | |
| 1978 | 684 | 648 |
| 1979 | 672 | 633 |
| 1980 | 691 | 646 |
| 1981 | 698 | 647 |

Disaggregation of the forecast of sub-provincial construction expenditures into types of construction is difficult due to the lack of adequate statistics at this level of disaggregation.

It is noted, however, that the average share of each identifiable type of construction in the total new construction expenditure during the 1971-1978 period in Ontario was as follows:

| Type of Construction | Ontario's average 1971-1978 (%) |
|---|---|
| 1. Residential Building | 39.9 |
| 2. Non-Residential Building | 26.1 |
| 3. Roads, Hwys., Aerodrome | 8.0 |
| 4. Non-Road Engineering | 26.0 |

## SCENARIO A

Assuming that Eastern Ontario's share of construction by type in the total construction during the years 1978 to 1981 would be approximately the same as the average share in the Province during the 1971-1978 period, the projected expenditures on construction by type would in high and low expectation be as presented in Table 1.

In order to translate the construction by type expenditure forecast, shown in various alternatives, into a demand forecast for sand and gravel and stone, it is assumed to be appropriate for this study to apply the input factors developed by Proctor and Redfern for the Central Ontario Aggregate Study with the exception of road construction for which input factors have been developed from actual 1975-1978 data provided by Ministry of Transportation and Communications.

## SCENARIO B

This scenario assumes that the construction by type in Eastern Ontario Economic Region during the 1978-1981 period might follow the Ontario trend of the 1971-1978 period and would give the following distribution pattern of construction by type:

| Type of Construction | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | (%) | | |
| 1. Residential Building | 38.7 | 44.1 | 45.0 | 45.9 |
| 2. Non-Residential Building | 27.0 | 20.7 | 19.5 | 18.3 |
| 3. Road Engineering | 8.3 | 6.7 | 6.4 | 6.2 |
| 4. Non-Road Engineering | 26.0 | 28.5 | 29.1 | 29.6 |

The trend indicates that substantial changes have occurred in the construction mix as compared with the average construction mix of the 1971-1978 period. Under this scenario, the high and low estimated expenditures on construction by type in Eastern Ontario Region for the years 1978 through 1981 are presented in Table 2.

## TABLE 1 CONSTRUCTION EXPENDITURES IN EASTERN ONTARIO ECONOMIC REGION BY TYPE OF CONSTRUCTION, 1978-1981

### SCENARIO A

| Type of Construction | 1978 High | 1978 Low | 1979 High | 1979 Low | 1980 High | 1980 Low | 1981 High | 1981 Low |
|---|---|---|---|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 272.9 | 245.0 | 268.1 | 237.0 | 275.7 | 239.4 | 278.5 | 238.2 |
| 2. Non-Residential Building | 178.5 | 160.3 | 175.4 | 155.0 | 180.4 | 156.6 | 182.2 | 155.8 |
| 3. Roads, Highways, Aerodrome | 54.7 | 49.1 | 53.8 | 47.5 | 55.3 | 48.0 | 55.8 | 47.8 |
| 4. Non-Road Engineering | 177.9 | 159.6 | 174.7 | 154.5 | 179.6 | 156.0 | 181.5 | 155.2 |
| TOTAL CONSTRUCTION | 684.0 | 614.0 | 672.0 | 594.0 | 691.0 | 600.0 | 698.0 | 597.0 |

Type of construction determined per Ontario average in 1971-1978



## TABLE 2 CONSTRUCTION EXPENDITURES IN EASTERN ONTARIO ECONOMIC REGION BY TYPE OF CONSTRUCTION, 1978-1981

### SCENARIO B

| Type of Construction | 1978 High | 1978 Low | 1979 High | 1979 Low | 1980 High | 1980 Low | 1981 High | 1981 Low |
|---|---|---|---|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 264.7 | 237.6 | 296.4 | 262.0 | 311.0 | 270.0 | 320.4 | 274.0 |
| 2. Non-Residential Building | 184.7 | 165.8 | 139.1 | 123.0 | 134.8 | 117.0 | 127.7 | 109.3 |
| 3. Roads, Highways, Aerodrome | 56.8 | 51.0 | 45.0 | 39.8 | 44.2 | 38.4 | 43.3 | 37.0 |
| 4. Non-Road Engineering | 177.8 | 159.6 | 191.5 | 169.2 | 201.0 | 174.6 | 206.6 | 176.7 |
| TOTAL CONSTRUCTION | 684.0 | 614.0 | 672.0 | 594.0 | 691.0 | 600.0 | 698.0 | 597.0 |

Type of construction projected per Ontario trend in 1971-1978

The construction value by type multiplied by the input factors yields the demand for aggregates for construction in Eastern Ontario Region.

The total demand for mineral aggregate, including non-construction use of aggregates, for years 1978 through 1981 in Eastern Ontario Region under the two scenarios, in thousands of metric tonnes, is summarized below:

SCENARIO "A"

| 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 14,242.2 | 12,968.8 | 13,859.6 | 12,434.0 | 14,073.0 | 12,416.2 | 14,238.3 | 12,412.2 |

SCENARIO "B"

| 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 14,543.7 | 13,242.1 | 12,728.7 | 11,433.7 | 12,649.1 | 11,185.2 | 12,634.9 | 11,026.8 |

The preceding estimates in the two scenarios indicate the demand for mineral aggregate in Eastern Ontario Economic Region in the following ranges:

| Year | High | Low |
|---|---|---|
| | (Thousands of Tonnes) | |
| 1978 | 14,544 | 12,968 |
| 1979 | 13,860 | 11,444 |
| 1980 | 14,073 | 11,185 |
| 1981 | 14,238 | 11,027 |

TABLE 3
SCENARIO A

## TOTAL DEMAND FOR MINERAL AGGREGATE IN EASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| 1. Residential Building | 1,080.1 | 969.7 | 1,061.1 | 938.0 | 1,091.2 | 947.5 | 1,023.3 | 942.8 |
| 2. Non-Residential Building | 1,274.7 | 1,144.7 | 1,252.5 | 1,106.9 | 1,288.2 | 1,118.3 | 1,301.1 | 1,112.6 |
| 3. Roads, Highways, Aerodrome | 7,581.4 | 6,805.3 | 7,456.7 | 6,583.5 | 7,664.6 | 6,652.8 | 7,733.9 | 6,625.1 |
| 4. Non-Road Engineering | 2,498.2 | 2,241.3 | 2,453.3 | 2,169.6 | 2,522.1 | 2,190.7 | 2,548.8 | 2,179.5 |
| Total Construction | 12,434.4 | 11,161.0 | 12,223.6 | 10,798.0 | 12,566.1 | 10,909.3 | 12,686.1 | 10,860.0 |
| Other Uses n.e.s. | 1,807.8 | 1,807.8 | 1,636.0 | 1,636.0 | 1,506.9 | 1,506.9 | 1,552.2 | 1,552.2 |
| TOTAL DEMAND | 14,242.2 | 12,968.8 | 13,859.6 | 12,434.0 | 14,073.0 | 12,416.2 | 14,238.3 | 12,412.2 |

Type of Construction determined per adjusted Ontario Average, 1971-1978

TABLE 4
SCENARIO B

## TOTAL DEMAND FOR MINERAL AGGREGATE IN EASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| 1. Residential Building | 1,047.7 | 940.4 | 1,173.2 | 1,037.0 | 1,230.9 | 1,068.7 | 1,268.1 | 1,084.5 |
| 2. Non-Residential Building | 1,318.9 | 1,184.0 | 993.3 | 878.3 | 962.6 | 835.5 | 911.9 | 780.5 |
| 3. Roads, Highways, Aerodrome | 7,872.5 | 7,068.6 | 6,237.0 | 5,516.3 | 6,126.1 | 5,322.2 | 6,001.4 | 5,128.2 |
| 4. Non-Road Engineering | 2,496.8 | 2,241.3 | 2,689.2 | 2,376.1 | 2,822.6 | 2,451.9 | 2,901.3 | 2,481.4 |
| Total Construction | 12,735.9 | 11,434.3 | 11,092.7 | 9,807.7 | 11,142.2 | 9,678.3 | 11,082.7 | 9,474.6 |
| Other Uses n.e.s. | 1,807.8 | 1,807.8 | 1,636.0 | 1,636.0 | 1,506.9 | 1,506.9 | 1,552.2 | 1,552.2 |
| TOTAL DEMAND | 14,543.7 | 13,242.1 | 12,728.7 | 11,443.7 | 12,649.1 | 11,185.2 | 12,634.9 | 11,026.8 |

Type of Construction projected per Ontario's trend in 1971-1978

TABLE 5 SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATE IN
SCENARIO A EASTERN ONTARIO ECONOMIC REGION BY COUNTIES, 1978-1981

| Counties | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Frontenac | 1,336.3 | 1,216.8 | 1,423.7 | 1,275.0 | 1,459.7 | 1,286.8 | 1,460.7 | 1,277.7 |
| Hastings | 1,056.7 | 965.5 | 880.6 | 794.9 | 893.6 | 793.9 | 960.2 | 794.9 |
| Lanark | 318.2 | 292.6 | 540.2 | 484.2 | 550.3 | 485.3 | 553.8 | 484.8 |
| Leeds & Grenville | 1,099.2 | 999.2 | 1,011.0 | 905.6 | 1,030.6 | 908.2 | 1,035.0 | 907.5 |
| Lennox & Addington | 306.6 | 280.5 | 240.4 | 217.8 | 243.9 | 217.6 | 246.3 | 218.7 |
| Ottawa-Carleton | 7,825.9 | 7,108.5 | 7,313.6 | 6,550.7 | 7,411.3 | 6,520.7 | 7,458.8 | 6,526.3 |
| Prescott & Russell | 562.0 | 512.5 | 601.3 | 539.0 | 611.2 | 538.8 | 612.8 | 537.0 |
| Prince Edward | 135.1 | 124.9 | 79.9 | 74.3 | 80.0 | 73.4 | 81.2 | 74.4 |
| Renfrew | 578.8 | 533.5 | 574.9 | 521.5 | 579.6 | 517.6 | 581.4 | 516.9 |
| Stormont, Dundas, & Glengarry | 1,023.4 | 934.8 | 1,194.0 | 1,071.0 | 1,212.8 | 1,073.9 | 1,248.1 | 1,074.0 |
| TOTAL | 14,242.2 | 12,968.8 | 13,859.6 | 12,434.0 | 14,073.0 | 12,416.2 | 14,238.3 | 12,412.2 |

TABLE 6
SCENARIO B

SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATE IN EASTERN ONTARIO ECONOMIC REGION BY COUNTIES, 1978-1981

| Counties | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Frontenac | 1,364.4 | 1,242.2 | 1,275.6 | 1,145.2 | 1,270.9 | 1,122.5 | 1,267.2 | 1,104.4 |
| Hastings | 1,078.9 | 985.7 | 841.3 | 760.8 | 837.9 | 745.9 | 839.1 | 737.9 |
| Lanark | 324.0 | 297.9 | 443.0 | 398.6 | 438.7 | 388.5 | 435.9 | 381.1 |
| Leeds & Grenville | 1,126.0 | 1,023.6 | 945.7 | 848.5 | 946.2 | 835.2 | 946.8 | 824.6 |
| Lennox & Addington | 313.0 | 286.4 | 234.0 | 212.3 | 233.8 | 208.9 | 235.1 | 207.8 |
| Ottawa-Carleton | 7,993.3 | 7,260.1 | 6,794.4 | 6,096.6 | 6,744.9 | 5,949.4 | 6,741.1 | 5,866.6 |
| Prescott & Russell | 573.7 | 523.1 | 540.9 | 485.9 | 537.8 | 475.4 | 535.9 | 467.1 |
| Prince Edward | 137.7 | 127.1 | 88.3 | 81.7 | 87.8 | 80.3 | 89.2 | 80.8 |
| Renfrew | 589.1 | 542.9 | 531.2 | 483.3 | 525.7 | 471.0 | 525.5 | 465.3 |
| Stormont, Dundas, & Glengarry | 1,043.6 | 953.1 | 1,034.3 | 930.8 | 1,025.4 | 908.1 | 1,019.1 | 891.2 |
| TOTAL | 14,543.7 | 13,242.1 | 12,728.7 | 11,443.7 | 12,649.1 | 11,185.2 | 12,634.9 | 11,026.8 |

TABLE 7 CONTROL OF DEMAND FORECAST FOR MINERAL AGGREGATES IN EASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Year | Residential Building | Non-Residential Building | Roads, Hwys., Aerodromes | Non-Road Engineering | Total Construction * |
|---|---|---|---|---|---|
| | | | (Tonnes) | | |
| 1978 | | | | | |
| Sand & Gravel | 587,536 | 553,259 | 4,192,428 | 1,256,339 | 6,589,562 |
| Crushed Stone | 488,537 | 460,035 | 3,486,012 | 1,044,649 | 5,479,233 |
| TOTAL | 1,076,073 | 1,013,294 | 7,678,440 | 2,300,988 | 12,068,795 |
| 1979 | | | | | |
| Sand & Gravel | 447,075 | 467,730 | 3,761,077 | 992,386 | 5,668,269 |
| Crushed Stone | 371,744 | 388,919 | 3,127,343 | 825,171 | 4,713,176 |
| TOTAL | 818,819 | 856,649 | 6,888,420 | 1,817,557 | 10,381,445 |
| 1980 | | | | | |
| Sand & Gravel | 559,483 | 466,829 | 3,768,645 | 1,149,623 | 5,944,581 |
| Crushed Stone | 465,212 | 388,170 | 3,133,635 | 955,914 | 4,942,930 |
| TOTAL | 1,024,695 | 854,999 | 6,902,280 | 2,105,537 | 10,887,511 |
| 1981 | | | | | |
| Sand & Gravel | 555,582 | 417,929 | 3,753,510 | 1,106,057 | 5,833,077 |
| Crushed Stone | 461,968 | 347,508 | 3,121,050 | 919,688 | 4,850,215 |
| TOTAL | 1,017,550 | 765,437 | 6,874,560 | 2,025,745 | 10,683,292 |

* construction uses only

## FORECAST CONTROL

The value of Residential and Non-Residential Building Construction for Eastern Ontario is estimated from the projected value of Eastern Ontario building permits adjusted by the appropriate ratios of Ontario's value of building permits to its cost of construction.

### ESTIMATED VALUE OF BUILDING PERMITS AND COST OF BUILDING CONSTRUCTION IN EASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Year | Forecast Value of Permits | Ratio of Permits to Cost of Construction | Estimated Value of Construction |
|---|---|---|---|
| | (1971 Constant Dollars in Thousands) | | |
| Residential Building | | | |
| 1978 | 195,477 | 71.9 | 271,873 |
| 1979 | 143,366 | 69.3 | 206,877 |
| 1980 | 174,493 | 67.4 | 258,892 |
| 1981 | 168,135 | 65.4 | 257,087 |
| Non-Residential Building | | | |
| 1978 | 118,059 | 93.2 | 141,898 |
| 1979 | 103,647 | 86.4 | 119,962 |
| 1980 | 103,328 | 86.3 | 119,731 |
| 1981 | 92,504 | 86.3 | 107,189 |

The value of Non-Road Engineering Construction is estimated on a ratio basis of Non-Road Engineering Construction Expenditures in the 1971-1978 period to the total value of both Residential and Non-Residential Building Construction in that period. This calculated ratio, averaging 0.396:1 of expenditure on Building Construction in the 1971-1977 period, is applied to estimated above values of total Building Construction in the years 1978 to 1980 to yield an estimated value of Non-Road Engineering Construction Expenditure. This approach to forecasting assumes that Non-Road Engineering Construction is a complementary service activity directly related to Residential and Non-Residential Building Construction.

| Year | Total Building Construction | Ratio | Estimated Value of Non-Road Engineering |
|---|---|---|---|
| | (1971 Constant Dollars in Thousands) | | |
| Non-Road Engineering | | | |
| 1978 | 413,771 | 0.396 | 163,853 |
| 1979 | 326,839 | 0.396 | 129,428 |
| 1980 | 378,623 | 0.396 | 149,935 |
| 1981 | 364,276 | 0.396 | 144,253 |

Total Road Construction

The value of road construction was estimated as a percentage of total projected expenditure on construction.

| Year | Total Construction | Road Construction |
|---|---|---|
| | (1971 Constant Dollars in Thousands) | |
| 1978 | 684,000 | 55,400 (8.1) |
| 1979 | 672,000 | 49,700 (7.4) |
| 1980 | 691,000 | 49,800 (7.2) |
| 1981 | 698,000 | 49,600 (7.1) |

* figures in brackets represent % of Total Construction

DEMAND FORECAST FOR MISCELLANEOUS USES OF MINERAL AGGREGATE
IN EASTERN ONTARIO, 1978-1981

| Counties | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | (Tonnes) | | |
| Frontenac | 169,131 | 148,416 | 140,633 | 144,689 |
| Hastings | 165,891 | 145,567 | 137,928 | 141,899 |
| Lanark | 68,784 | 60,190 | 56,879 | 58,362 |
| Leeds & Grenville | 122,691 | 107,660 | 102,011 | 104,948 |
| Lennox & Addington | 52,223 | 46,432 | 44,555 | 46,398 |
| Ottawa-Carleton | 820,867 | 772,312 | 690,739 | 714,690 |
| Prescott & Russell | 78,314 | 67,094 | 62,076 | 62,364 |
| Prince Edward | 35,406 | 31,428 | 30,110 | 31,308 |
| Renfrew | 136,201 | 117,343 | 109,185 | 110,326 |
| Stormont, Dundas, & Glengarry | 158,290 | 139,523 | 132,778 | 137,178 |
| TOTAL | 1,807,798 | 1,635,965 | 1,506,894 | 1,552,162 |

## NORTHEASTERN ONTARIO ECONOMIC REGION

Northeastern Ontario Economic Region, recently re-named by the Office of Economic Policy of the Ministry of Treasury and Economics, from the former Northeastern Ontario Planning Region consists of the following territorial districts:

(1) Algoma
(2) Cochrane
(3) Manitoulin
(4) Nipissing
(5) Parry Sound
(6) Sudbury
(7) Timiskaming

The methodology used in forecasting the short-term demand for mineral aggregate in Northeastern Economic (Planning) Region and its constituent territorial districts was developed in the pilot study prepared for Central Ontario Economic Region.

The Sudbury Area Aggregate Study prepared by Proctor & Redfern Limited and the Mineral Aggregate Study for the Thunder Bay area prepared by James F. MacLaren Limited for the Ministry of Natural Resources have also been helpful in adjusting the Ontario distribution pattern of the value of construction by type to reflect more realistically the probable distribution pattern in Northeastern Ontario. Hard data for the value of construction by type does not yet exist at any of the subprovincial levels of disaggregation.

The statistical demand forecast for the Region is distributed to its constituent territorial districts in the following manner:

- Residential Building Construction is distributed by applying the 1971-1978 ratio of residential building permits value in each district to the regional total.
- Non-Residential Building Construction is distributed by applying the ratio of the value of non-residential building permits in each district to the regional total.
- Non-Road Engineering Construction is allocated to each district on the basis of the integrated ratios of total building construction permits in each district to the regional total.
- Road Engineering construction, repair and maintenance is forecast for the Territorial Districts of Northeastern Ontario Economic Region on the basis of the estimated share of demand based on the analyses of the respective areas, population, density and road systems.

The calculated Districts' shares in total Regional Roads Construction are as follows:

| Territorial District | % Share |
|---|---|
| Algoma | 26.0 |
| Cochrane | 17.0 |
| Manitoulin | 1.5 |
| Nipissing | 10.2 |
| Parry Sound | 10.7 |
| Sudbury (including Regional Municipality) | 25.0 |
| Timiskaming | 9.6 |
| **Regional Total** | 100.0 |

- The demand for mineral aggregate for flux and mine backfill was derived from information on major mining operations in the respective areas under study and from the Proctor and Redfern Mineral Aggregate Study for the Sudbury area.
- Other than for construction, uses of aggregate were distributed to Districts on a per capita basis.

In order to determine the per capita income for Northeastern Ontario Economic Region an assumption was made that a reasonable relationship exists between the **gross income per capita** and the **disposable income and retail sales per capita**; and, that the distribution of provincial gross

income per capita to Ontario's planning regions may be estimated on the basis of the known distribution patterns for disposable incomes and retail sales.

## MARKET AND INCOME RATING INDEXES NORTHEASTERN ONTARIO ECONOMIC REGION

| Year | Market Rating Index (MRI) | Income Rating Index (IRI) | Market Attraction Index (MAI) |
|---|---|---|---|
| **Ontario** | 100 | 100 | 1.0 |
| **Northeastern Ontario Economic Region** | | | |
| 1976 | 0.997 | 0.789 | 1.2636 |
| 1977 | 0.931 | 0.815 | 1.1423 |
| Average 1976-1977 | 0.965 | 0.8023 | 1.203 |

The preceding market and income rating indexes when applied to the Ontario gross income per capita yield the following alternative estimates for Gross Regional Income per capita in Northeastern Ontario Economic Region:

## ESTIMATED GROSS INCOME PER CAPITA IN NORTHEASTERN ONTARIO ECONOMIC REGION

(1971 Constant Dollars)

| Year | Per MRI Index | Per IRI Index | Ontario Average |
|---|---|---|---|
| 1976 | 5,605 | 4,435 | 5,621 |
| 1977 | 5,395 | 4,723 | 5,795 |
| Average 1976-77 | 5,508 | 4,580 | 5,708 |
| 1978 | 5,684 | 4,726 | 5,890 |
| 1979 | 5,687 | 4,728 | 5,893 |
| 1980 | 5,859 | 4,872 | 6,072 |
| 1981 | 6,029 | 5,012 | 6,247 |

The estimated and projected Gross Regional Income per capita adjusted by the Market Rating Index, and the projection adjusted by the Income Rating Index represent the low-end and the high-end of the range. It is felt that a realistic estimate of gross income per capita would be in mid-range of the two estimates, namely: 1978 — $5,205, 1979 — $5,358, 1980 — $5,366 and 1981 — $5,521.

**Gross Regional Product** estimates are calculated by applying alternative estimates of gross income per capita to estimated population in Northeastern Ontario for the 1978-1981 period.

## GROSS REGIONAL PRODUCT OF NORTHEASTERN ONTARIO, 1978-81

| Year | MRI-Basis | IRI-Basis | MRI-IRI Mid-Point | Population No. |
|---|---|---|---|---|
| | | (1971 Constant Dollars in Millions) | | |
| 1978 | 3,359 | 2,793 | 3,076 | 590,920 |
| 1979 | 3,389 | 2,818 | 3,104 | 596,007 |
| 1980 | 3,522 | 2,929 | 3,226 | 601,094 |
| 1981 | 3,655 | 3,038 | 3,347 | 606,180 |

TABLE 7

## CONTROL OF DEMAND FORECAST FOR MINERAL AGGREGATE IN NORTHEASTERN ONTARIO ECONOMIC AREA, 1978-1981

| Year | Residential Building | Non-Residential Building | Roads, Hwys., Aerodromes | Non-Road Engineering | Smelting & Refining | Total Construction |
|---|---|---|---|---|---|---|
| | | | (Tonnes) | | | |
| 1978 | | | | | | |
| Sand & Gravel | 489,957 | 344,499 | 3,979,012 | 465,509 | 2,012,010 | 7,290,987 |
| Stone | 407,401 | 286,451 | 3,308,556 | 387,072 | 1,672,990 | 6,062,470 |
| High total | 897,358 | 630,950 | 7,287,568 | 852,581 | 3,685,000 | 13,353,457 |
| Sand & Gravel | 440,963 | 310,051 | 3,581,153 | 418,955 | 1,610,700 | 6,361,822 |
| Stone | 366,662 | 257,808 | 2,977,735 | 348,362 | 1,339,300 | 5,289,867 |
| Low total | 807,625 | 567,859 | 6,558,888 | 767,317 | 2,950,000 | 11,651,689 |
| 1979 | | | | | | |
| Sand & Gravel | 405,463 | 503,708 | 3,950,445 | 478,716 | 2,012,000 | 7,350,342 |
| Stone | 337,143 | 418,835 | 3,284,802 | 398,053 | 1,672,990 | 6,111,823 |
| High total | 742,606 | 922,543 | 7,235,247 | 876,769 | 3,685,000 | 13,462,165 |
| Sand & Gravel | 364,915 | 453,338 | 3,555,400 | 430,841 | 1,610,700 | 6,415,194 |
| Stone | 303,427 | 376,952 | 2,956,322 | 358,245 | 1,339,300 | 5,334,246 |
| Low total | 668,342 | 830,290 | 6,511,722 | 789,086 | 2,950,000 | 11,749,440 |
| 1980 | | | | | | |
| Sand & Gravel | 509,735 | 373,286 | 3,935,744 | 490,674 | 2,012,010 | 7,321,449 |
| Stone | 423,846 | 310,388 | 3,272,579 | 407,997 | 1,672,990 | 6,087,800 |
| High total | 933,581 | 683,674 | 7,208,323 | 898,671 | 3,685,000 | 13,409,249 |
| Sand & Gravel | 458,763 | 335,960 | 3,542,159 | 441,608 | 1,610,700 | 6,389,190 |
| Stone | 381,462 | 279,351 | 2,945,312 | 367,198 | 1,339,300 | 5,312,623 |
| Low total | 840,225 | 615,311 | 6,487,471 | 808,806 | 2,950,000 | 11,701,813 |

TABLE 7 (cont'd) CONTROL OF DEMAND FORECAST FOR MINERAL AGGREGATE IN NORTHEASTERN ONTARIO ECONOMIC AREA, 1978-1981

| Year | Residential Building | Non-Residential Building | Roads, Hwys., Aerodromes | Non-Road Engineering | Smelting & Refining | Total Construction |
|---|---|---|---|---|---|---|
| 1981 | | | | (Tonnes) | | |
| Sand & Gravel | 516,722 | 351,532 | 3,914,266 | 485,907 | 2,012,010 | 7,280,437 |
| Stone | 429,656 | 292,299 | 3,254,720 | 404,033 | 1,672,990 | 6,053,698 |
| High total | 946,378 | 643,831 | 7,168,986 | 889,940 | 3,685,000 | 13,334,135 |
| Sand & Gravel | 465,053 | 316,375 | 3,522,871 | 437,315 | 1,610,700 | 6,352,314 |
| Stone | 386,692 | 263,067 | 2,929,274 | 363,629 | 1,339,300 | 5,281,962 |
| Low total | 851,745 | 579,442 | 6,452,145 | 800,944 | 2,950,000 | 11,634,276 |

## CONSTRUCTION EXPENDITURE FORECAST
## NORTHEASTERN ONTARIO ECONOMIC REGION, 1978-1981

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | |
| **Gross Regional Product MRI-High Alternative** | 3,359 | 3,389 | 3,522 | 3,655 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 333 | 339 | 342 | 346 |
| Estimated Construction Expenditure: for NE. Ontario adjusted by NE.O.E.R. Market Attraction Index, 1976-1977 average | 401 | 408 | 412 | 416 |
| **Gross Regional Product IRI-Low alternative** | 2,793 | 2,818 | 2,929 | 3,038 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 277 | 282 | 285 | 304 |
| Estimated Construction Expenditure: for NE. Ontario adjusted by NE.O.E.R. Market Attraction Index, 1976-1977 average | 333 | 339 | 342 | 365 |

The high and low alternative forecasts of construction expenditure for Northeastern Ontario Economic Region in 1978-1981 period adjusted by pull of the market are as follows:

| Year | High | Low |
|---|---|---|
| | (1971 Constant Dollars in Millions) | |
| 1978 | 401.0 | 333.0 |
| 1979 | 408.0 | 339.0 |
| 1980 | 412.0 | 342.0 |
| 1981 | 416.0 | 365.0 |

The average share of each identifiable type of construction in the total new construction expenditure during the 1971-1978 period in Ontario and the Thunder Bay and the Sudbury territorial districts in 1976 was used as a basis for estimating the following average profile of construction in Northeastern Ontario:

| | Shares in Total Construction | | | |
|---|---|---|---|---|
| **Type of Construction** | **Ontario's average 1971-78** | **Sudbury District 1976** | **Thunder Bay District 1976** | **NE Ontario estimated** |
| | % | | | |
| 1. Residential Building | 39.9 | 42.2 | 24.1 | 35.4 |
| 2. Non-Residential Building | 26.1 | 16.0 | 24.1 | 22.0 |
| 3. Roads, Hwys., Aerodrome | 8.0 | 9.9 | 4.8 | 7.6 |
| 4. Non-Road Engineering | 26.0 | 31.9 | 47.0 | 35.0 |

## SCENARIO A

This scenario assumes that Northeastern Ontario's share of construction by type in the total construction during the years 1978 to 1981 would be approximately the same as the average share in the Province during the 1971-1978 period modified by the construction distribution pattern of 1976 as determined by James F. MacLaren Ltd. and Proctor & Redfern Ltd. in the Thunder Bay and Sudbury districts, respectively. The projected expenditures on construction by type in the high and low alternative are presented in Table 1.

## SCENARIO B

This scenario assumes that the construction by type in Northeastern Ontario during the 1978-1981 period might follow the Ontario trend of the 1971-1978 period which when adjusted by the Thunder Bay-Sudbury differential factors gives the following distribution pattern of construction by types:

| Type of Construction | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | % | | |
| 1. Residential Building | 36.7 | 37.4 | 38.2 | 38.9 |
| 2. Non-Residential Building | 15.9 | 14.4 | 14.0 | 13.5 |
| 3. Road Engineering | 6.2 | 5.9 | 5.7 | 5.5 |
| 4. Non-Road Engineering | 41.2 | 42.3 | 42.1 | 42.1 |

The trend indicates that substantial changes had occurred in the construction mix as compared with the average construction mix of the 1971-1977 period. Under this assumption, the high and low estimated expenditures on construction by type in Northeastern Ontario for the years 1978 through 1981 are presented in Table 2.

TABLE 1

CONSTRUCTION EXPENDITURES IN NORTHEASTERN ONTARIO ECONOMIC REGION
BY TYPE OF CONSTRUCTION, 1978-1981

SCENARIO A

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 142.0 | 117.9 | 144.4 | 120.0 | 145.9 | 121.1 | 147.3 | 129.2 |
| 2. Non-Residential Building | 88.2 | 73.3 | 89.8 | 74.6 | 90.6 | 75.2 | 91.5 | 80.3 |
| 3. Roads, Highways, Aerodrome | 30.5 | 25.3 | 31.0 | 25.8 | 31.3 | 26.0 | 31.6 | 27.7 |
| 4. Non-Road Engineering | 140.3 | 116.5 | 142.8 | 118.6 | 144.2 | 119.7 | 145.6 | 127.8 |
| TOTAL CONSTRUCTION | 401.0 | 333.0 | 408.0 | 339.0 | 412.0 | 342.0 | 416.0 | 365.0 |

Type of construction determined per adjusted Ontario average in 1971-1978

TABLE 2

## CONSTRUCTION EXPENDITURES IN NORTHEASTERN ONTARIO ECONOMIC REGION BY TYPE OF CONSTRUCTION, 1978-1981

SCENARIO B

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 147.1 | 122.2 | 152.6 | 126.8 | 157.4 | 130.6 | 161.8 | 142.0 |
| 2. Non-Residential Building | 63.8 | 53.0 | 58.8 | 48.8 | 57.7 | 47.9 | 56.2 | 49.3 |
| 3. Roads, Highways, Aerodrome | 24.9 | 20.6 | 24.0 | 20.0 | 23.5 | 19.5 | 22.9 | 20.1 |
| 4. Non-Road Engineering | 165.2 | 137.2 | 172.6 | 143.4 | 173.4 | 144.0 | 175.1 | 153.6 |
| TOTAL CONSTRUCTION | 401.0 | 333.0 | 408.0 | 339.0 | 412.0 | 342.0 | 416.0 | 365.0 |

Type of construction projected per adjusted Ontario trend in 1971-1978

## INPUT FACTORS

The input factors derived from the studies of the Thunder Bay and the Sudbury areas, adjusted to metric tonnes and 1971 constant dollars, and the calculated averages for Northeastern Ontario Economic Region as well as the comparable input factors for Ontario as a whole are as follows:

| Type of Construction | Sudbury | Thunder Bay | Estimated NE Ont. | Ontario |
|---|---|---|---|---|
| 1. Residential Building | 0.005604 | 0.012382 | 0.008993 | 0.003958 |
| 2. Non-Residential Bldg. | 0.011139 | 0.016179 | 0.013659 | 0.007141 |
| 3. Roads Engineering | 0.168837 | 0.213071 | 0.190954 | 0.138600 |
| 4. Non-Road Engineering | 0.020841 | 0.008657 | 0.014749 | 0.014043 |

With the exception of the input factor for non-road engineering construction which is similar to Ontario's standard, the remaining input factors for northeastern Ontario indicate a considerably higher consumption of mineral aggregate than the standard of consumption in the Province as a whole. The reason for this higher pattern of consumption per unit value of construction is considered to be the general terrain and climatic conditions of the area.

The construction value by type multiplied by the developed input factors yields the demand for aggregates for construction in Northeastern Ontario Economic Region. In addition an estimate, based on expectations of major mines in the area, has been prepared for flux and mine backfill requirements and for other than construction uses of aggregate.

Total demand for mineral aggregate other than for construction uses of aggregate for years 1978 through 1981 in Northeastern Ontario Economic Region in thousands of metric tonnes, is forecast as follows:

SCENARIO "A"

| 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 14,962 | 12,462 | 15,025 | 12,512 | 15,082 | 12,539 | 15,201 | 13,143 |

SCENARIO "B"

| 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 13,973 | 11,634 | 13,777 | 11,479 | 13,675 | 11,469 | 13,624 | 11,763 |

TABLE 3
SCENARIO A

## DEMAND FOR MINERAL AGGREGATE IN NORTHEASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Mining & Smelting | 3,685 | 2,950 | 3,685 | 2,950 | 3,685 | 2,950 | 3,685 | 2,950 |
| Residential Building | 1,277 | 1,060 | 1,299 | 1,079 | 1,312 | 1,089 | 1,325 | 1,162 |
| Non-Residential Building | 1,205 | 1,001 | 1,227 | 1,019 | 1,238 | 1,027 | 1,250 | 1,097 |
| Roads, Hwys., Aerodrome | 5,824 | 4,831 | 5,920 | 4,927 | 5,977 | 4,965 | 6,034 | 5,289 |
| Non-Road Engineering | 2,069 | 1,718 | 2,106 | 1,749 | 2,127 | 1,765 | 2,147 | 1,885 |
| Total Construction | 14,060 | 11,560 | 14,237 | 11,724 | 14,339 | 11,796 | 14,441 | 12,383 |
| Other Uses n.e.s. | 902 | 902 | 788 | 788 | 743 | 743 | 760 | 760 |
| TOTAL DEMAND | 14,962 | 12,462 | 15,025 | 12,512 | 15,082 | 12,539 | 15,201 | 13,143 |

TABLE 4
SCENARIO B

## DEMAND FOR MINERAL AGGREGATE IN NORTHEASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Mining & Smelting | 3,685 | 2,950 | 3,685 | 2,950 | 3,685 | 2,950 | 3,685 | 2,950 |
| Residential Building | 1,323 | 1,100 | 1,372 | 1,140 | 1,415 | 1,174 | 1,455 | 1,277 |
| Non-Residential Building | 871 | 724 | 803 | 667 | 788 | 654 | 768 | 673 |
| Roads, Hwys., Aerodrome | 4,755 | 3,934 | 4,583 | 3,819 | 4,487 | 3,824 | 4,373 | 3,838 |
| Non-Road Engineering | 2,437 | 2,024 | 2,546 | 2,115 | 2,557 | 2,124 | 2,583 | 2,265 |
| Total Construction | 13,071 | 10,732 | 12,989 | 10,691 | 12,932 | 10,726 | 12,864 | 11,003 |
| Other Uses n.e.s. | 902 | 902 | 788 | 788 | 743 | 743 | 760 | 760 |
| TOTAL DEMAND | 13,973 | 11,634 | 13,777 | 11,479 | 13,675 | 11,469 | 13,624 | 11,763 |

TABLE 5 SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATES IN SCENARIO A

NORTHEASTERN ONTARIO ECONOMIC REGION, BY DISTRICTS, 1978-1981

| Territorial District | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Algoma | 4,199.8 | 3,543.8 | 4,197.6 | 3,539.4 | 3,844.0 | 3,238.8 | 3,877.9 | 3,403.5 |
| Cochrane | 2,414.4 | 2,026.9 | 2,399.8 | 2,015.2 | 2,628.2 | 2,202.5 | 2,649.8 | 2,311.1 |
| Manitoulin | 114.0 | 95.8 | 112.8 | 94.0 | 118.6 | 99.6 | 119.8 | 105.0 |
| Nipissing | 1,284.0 | 1,047.8 | 1,173.4 | 955.2 | 1,455.4 | 1,188.6 | 1,467.9 | 1,256.6 |
| Parry Sound | 842.6 | 707.7 | 797 8 | 670.6 | 851.6 | 713.4 | 860.1 | 759.0 |
| Sudbury | 4,898.8 | 4,056.5 | 5,377.8 | 4,456.3 | 5,091.4 | 4,209.7 | 5,124.2 | 4,372.1 |
| Timiskaming | 1,208.4 | 983.5 | 965.8 | 781.3 | 1,092.8 | 886.4 | 1,101.3 | 935.7 |
| TOTAL | 14,962.0 | 12,462.0 | 15,025.0 | 12,512.0 | 15,082.0 | 12,539.0 | 15,201.0 | 13,143.0 |

TABLE 6 SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATES IN NORTHEASTERN ONTARIO ECONOMIC REGION, BY DISTRICTS, 1978-1981

SCENARIO B

| Territorial District | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Algoma | 3,987.0 | 3,364.2 | 3,917.2 | 3,307.0 | 3,517.2 | 2,992.3 | 3,509.8 | 3,083.8 |
| Cochrane | 2,239.3 | 1,880.9 | 2,176.5 | 1,829.5 | 2,377.0 | 2,010.4 | 2,367.4 | 2,063.1 |
| Manitoulin | 99.3 | 83.4 | 92.6 | 77.7 | 96.0 | 83.0 | 95.3 | 84.4 |
| Nipissing | 1,182.5 | 962.6 | 1,052.4 | 855.3 | 1,311.6 | 1,079.7 | 1,307.0 | 1,115.5 |
| Parry Sound | 738.6 | 620.1 | 667.1 | 562.9 | 702.7 | 600.8 | 694.2 | 614.5 |
| Sudbury | 4,625.7 | 3,827.8 | 5,024.6 | 4,163.8 | 4,723.4 | 3,928.5 | 4,711.5 | 4,011.3 |
| Timiskaming | 1,100.6 | 895.0 | 846.6 | 682.8 | 947.1 | 774.3 | 938.8 | 790.4 |
| TOTAL | 13,973.0 | 11,634.0 | 13,777.0 | 11,479.0 | 13,675.0 | 11,469.0 | 13,624.0 | 11,763.0 |

## FORECAST CONTROL

The forecast control scenario for estimating the cost of building construction and for breaking-up the total cost of construction by category is based on the value of building permits issued for the building construction. It is assumed that the 1971-1978 ratio of the value of building permits in Ontario to the actual cost of building construction is sufficiently valid for estimating the cost of building construction in the Northeastern Ontario area for the 1978-1981 period. The road engineering construction and the non-road engineering construction are determined on the basis of their historical average relationship to total building construction modified by the 1971-1978 trends.

The value of Residential and Non-Residential Building Construction for Northeastern Ontario is estimated from the projected value of Northeastern Ontario building permits adjusted by the appropriate ratios of Ontario's value of building permits to its cost of construction.

The value of Non-Road Engineering Construction is estimated on a ratio basis of Non-Road Engineering Construction Expenditures in the 1971-1978 period to the total value of both Residential and Non-Residential Building Construction in that period. This calculated ratio averaging 0.396:1 of expenditure on Building Construction in the 1971-1978 period is applied to the estimated above values of total Building Construction in the years 1978 to 1981 to yield an estimated value of Non-Road Engineering Construction Expenditure. This approach to forecasting assumes that Non-Road Engineering Construction is a complementary service activity directly related to Residential and Non-Residential Building Construction.

## ESTIMATED VALUE OF BUILDING PERMITS AND COST OF BUILDING CONSTRUCTION IN NORTHEASTERN ONTARIO ECONOMIC REGION, 1978-1981

| Year | Forecast Value of Permits | Ratio of Permits to Cost of Construction | Estimated Value of Construction | |
|---|---|---|---|---|
| | | (1971 Constant Dollars in Thousands) | | |
| Residential Building | | | High | Low |
| 1978 | 71,745 | 71.9 | 99,784 | 89,806 |
| 1979 | 57,225 | 69.3 | 82,576 | 74,318 |
| 1980 | 69,969 | 67.4 | 103,812 | 93,431 |
| 1981 | 68,824 | 65.4 | 105,235 | 94,712 |
| Non-Residential Building | | | | |
| 1978 | 43,052 | 93.2 | 46,193 | 41,574 |
| 1979 | 58,355 | 86.4 | 67,541 | 60,787 |
| 1980 | 43,196 | 86.3 | 50,053 | 45,048 |
| 1981 | 40,678 | 86.3 | 47,136 | 42,422 |

The low total is calculated by a 10% deviation from the high total.

| | Total Building Construction | Ratio | Estimated Value of Non-Road Engineering | |
|---|---|---|---|---|
| Non-Road Engineering | | | | |
| 1978 | 145,977 | 0.396 | 57,806 | 52,025 |
| 1979 | 150,117 | 0.396 | 59,446 | 53,501 |
| 1980 | 153,865 | 0.396 | 60,931 | 54,838 |
| 1981 | 152,371 | 0.396 | 60,339 | 54,305 |

| | Total Road Construction | |
|---|---|---|
| (Determined per Ontario's average modified by Ontario's trend in the high alternative) | | |
| 1978 | 38,164 | 34,348 |
| 1979 | 37,890 | 34,101 |
| 1980 | 37,749 | 33,974 |
| 1981 | 37,543 | 33,789 |

The low total is calculated by a 10% deviation from the high total.

| | Estimated Smelting & Refining (Thousands of Tonnes) | |
|---|---|---|
| 1978-1981 | 3,685 | 2,950 |

DEMAND FORECAST FOR MISCELLANEOUS USES OF MINERAL AGGREGATE
IN NORTHEASTERN ONTARIO, 1978-1981

| Territorial District | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | | (Tonnes) | |
| Algoma | 254,576 | 222,249 | 190,890 | 195,357 |
| Cochrane | 145,339 | 125,311 | 129,240 | 132,265 |
| Manitoulin | 6,321 | 5,517 | 5,200 | 5,321 |
| Nipissing | 76,763 | 60,686 | 71,305 | 72,974 |
| Parry Sound | 49,671 | 40,194 | 40,109 | 41,048 |
| Sudbury | 297,120 | 284,511 | 253,282 | 259,210 |
| Timiskaming | 72,248 | 49,651 | 52,737 | 53,971 |
| TOTAL | 902,038 | 788,119 | 742,763 | 760,146 |

## NORTHWESTERN ONTARIO ECONOMIC REGION

Northwestern Ontario Economic Region, recently re-named by the Office of Economic Policy of the Ministry of Treasury and Economics from the former Northwestern Ontario Planning Region consists of the following territorial districts:

(1) Kenora
(2) Rainy River
(3) Thunder Bay

The general methodology of forecasting demand for mineral aggregate followed in this study was developed in the pilot study for Central Ontario Economic Region.

In order to determine the per capita income for Northwestern Ontario Economic Region an assumption was made that a reasonable relationship exists between the **gross income per capita** and the **disposable income and retail sales per capita**; and, that the distribution of provincial gross income per capita to Ontario's planning regions may be estimated on the basis of the known distribution patterns for disposable incomes and retail sales.

## MARKET AND INCOME RATING INDEXES NORTHWESTERN ONTARIO ECONOMIC REGION

| Year | Market Rating Index (MRI) | Income Rating Index (IRI) | Market Attraction Index (MAI) |
|---|---|---|---|
| **Ontario** | 100 | 100 | 1.0 |
| **Northwestern Ontario Economic Region** | | | |
| 1976 | 0.923 | 0.903 | 1.0221 |
| 1977 | 0.976 | 0.916 | 1.0655 |
| Average 1976-1977 | .950 | .910 | 1.0440 |

## TOTAL PRODUCTION OF MINERAL AGGREGATE IN ONTARIO, 1976-1977

(Tonnes)

| County-District | 1976 | 1977 |
|---|---|---|
| Kenora | 631,565 | 790,830 |
| Thunder Bay | 2,518,178 | 3,025,133 |
| Rainy River | 285,763 | 247,361 |
| Northwestern Ontario Economic Region TOTAL | 3,435,506 | 4,065,324 |

The preceding market and income rating indexes when applied to the Ontario gross income per capita yield the following alternative estimates for Gross Regional Income per capita in Northwestern Ontario Economic Region (NW.O.E.R.):

## ESTIMATED GROSS INCOME PER CAPITA IN NORTHWESTERN ONTARIO ECONOMIC REGION

(1971 Constant Dollars)

| Year | Per MRI Index | Per IRI Index | Ontario Average |
|---|---|---|---|
| 1976 | 5,188 | 5,076 | 5,621 |
| 1977 | 5,656 | 5,308 | 5,795 |
| Average 1976-77 | 5,423 | 5,194 | 5,708 |
| 1978 | 5,596 | 5,360 | 5,890 |
| 1979 | 5,598 | 5,363 | 5,893 |
| 1980 | 5,768 | 5,526 | 6,072 |
| 1981 | 5,935 | 5,685 | 6,247 |

The estimated and projected Gross Regional Income per capita adjusted by the Market Rating Index, and the projection adjusted by the Income Rating Index, represent the low-end and the high-end of the range. It is felt that a realistic estimate of gross income per capita would be in mid-range of the two estimates, namely: 1978 — $5,478, 1979 — $5,481, 1980 — $5,647 and 1981 — $5,810.

**Gross Regional Product** estimates are calculated by applying alternative estimates of gross income per capita to estimated population in Northwestern Ontario for the 1978-1981 period.

## GROSS REGIONAL PRODUCT OF NORTHWESTERN ONTARIO, 1978-1981

| Year | MRI-Basis | IRI-Basis | MRI-IRI Mid-point | Population No. |
|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | |
| 1978 | 1,327 | 1,271 | 1,299 | 237,100 |
| 1979 | 1,343 | 1,287 | 1,315 | 239,960 |
| 1980 | 1,401 | 1,342 | 1,372 | 242,810 |
| 1981 | 1,458 | 1,396 | 1,427 | 245,600 |

## CONSTRUCTION EXPENDITURE FORECAST NORTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | |
| **Gross Regional Product MRI-High alternative** | 1,327 | 1,343 | 1,401 | 1,458 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 131 | 134 | 136 | 139 |
| Estimated Construction Expenditure: for NW. Ontario adjusted by NW.O.E.R. Market Attraction Index, 1976-1977 average | 137 | 140 | 142 | 145 |

## CONSTRUCTION EXPENDITURE FORECAST
## NORTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | | |
| **Gross Regional Product** | | | | |
| **IRI-Low alternative** | 1,271 | 1,287 | 1,342 | 1,396 |
| Estimated Construction Expenditure: per Ontario's ratio of construction to GPP | 126 | 129 | 130 | 133 |
| Estimated Construction Expenditure: for NW. Ontario adjusted by NW.O.E.R. Market Attraction Index 1976-1977 average | 132 | 135 | 136 | 139 |

The high and low alternative forecasts of construction expenditure for Northwestern Ontario Economic Region in 1978-1981 period adjusted by the pull of the market are as follows:

| Year | High | Low | Mid-point |
|---|---|---|---|
| | (1971 Constant Dollars in Millions) | | |
| 1978 | 137.0 | 132.0 | 134.5 |
| 1979 | 140.0 | 135.0 | 137.5 |
| 1980 | 142.0 | 136.0 | 139.0 |
| 1981 | 145.0 | 139.0 | 142.0 |

The average share of each identifiable type of construction in the total new construction expenditure during the 1971-1978 period in Ontario and of the Thunder Bay and the Sudbury territorial districts in 1976 formed the basis for estimating the construction by type in Northwestern Ontario Economic Region.

### SHARES IN TOTAL CONSTRUCTION

| Type of Construction | Ontario's average 1971-1978 | Sudbury District 1976 | Thunder Bay District 1976 | NW Ontario estimated |
|---|---|---|---|---|
| 1. Residential Building | 39.9 | 42.2 | 24.1 | 35.4 |
| 2. Non-Residential Building | 26.1 | 16.0 | 24.1 | 22.0 |
| 3. Roads, Hwys., Aerodrome | 8.0 | 9.9 | 4.8 | 7.6 |
| 4. Non-Road Engineering | 26.0 | 31.9 | 47.0 | 35.0 |

### SCENARIO A

Scenario "A" assumes that Northwestern Ontario's share of construction by type in the total construction during the years 1978 to 1981 would be approximately the same as the average share in the Province during the 1971-1978 period modified by the construction distribution pattern of 1976 as determined by James F. MacLaren Ltd. and Proctor & Redfern Ltd. in the Thunder Bay and Sudbury districts, respectively. The projected expenditures on construction by type would in high, low and mid-point expectation be as presented in Table 1.

## SCENARIO B

This scenario assumes that the construction by type in Northwestern Ontario during the 1978-1981 period might follow the Ontario trend of the 1971-1978 period which, when adjusted by the Thunder Bay-Sudbury differential factors, gives the following distribution pattern of construction by types:

| Type of Construction | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| | | % | | |
| 1. Residential Building | 36.7 | 37.4 | 38.2 | 38.9 |
| 2. Non-Residential Building | 15.9 | 14.4 | 14.0 | 13.5 |
| 3. Road Engineering | 6.2 | 5.9 | 5.7 | 5.5 |
| 4. Non-Road Engineering | 41.2 | 42.3 | 42.1 | 42.1 |

The trend indicates that substantial changes had occurred in the construction mix as compared with the average construction mix of the 1971-1977 period. Under this assumption, the medium, high and low estimated expenditures on construction by type in Northwestern Ontario for the years 1978 through 1981 are presented in Table 2.

TABLE 1

CONSTRUCTION EXPENDITURES IN NORTHWESTERN ONTARIO ECONOMIC REGION
BY TYPE OF CONSTRUCTION, 1978-1981

SCENARIO A

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 48.5 | 46.7 | 49.6 | 47.8 | 50.3 | 48.2 | 51.3 | 49.1 |
| 2. Non-Residential Building | 30.1 | 29.1 | 30.8 | 29.7 | 31.2 | 29.9 | 31.9 | 30.8 |
| 3. Roads, Hwys., Aerodrome | 10.4 | 10.0 | 10.6 | 10.3 | 10.8 | 10.3 | 11.0 | 10.5 |
| 4. Non-Road Engineering | 48.0 | 46.2 | 49.0 | 47.2 | 49.7 | 47.6 | 50.8 | 48.6 |
| TOTAL CONSTRUCTION | 137.0 | 132.0 | 140.0 | 135.0 | 142.0 | 136.0 | 145.0 | 139.0 |

Type of construction determined per adjusted Ontario average in 1971-1978.

TABLE 2

CONSTRUCTION EXPENDITURES IN NORTHWESTERN ONTARIO ECONOMIC REGION BY TYPE OF CONSTRUCTION, 1978-1981

SCENARIO B

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (1971 Constant Dollars in Millions) | | | | | | | |
| 1. Residential Building | 50.3 | 48.4 | 52.4 | 50.5 | 54.2 | 52.0 | 56.4 | 54.1 |
| 2. Non-Residential Building | 21.8 | 21.0 | 20.1 | 19.4 | 19.9 | 19.0 | 19.6 | 18.8 |
| 3. Roads, Hwys., Aerodrome | 8.5 | 8.2 | 8.3 | 8.0 | 8.1 | 7.7 | 8.0 | 7.6 |
| 4. Non-Road Engineering | 56.4 | 54.4 | 59.2 | 57.1 | 59.8 | 57.3 | 61.0 | 58.5 |
| TOTAL CONSTRUCTION | 137.0 | 132.0 | 140.0 | 135.0 | 142.0 | 136.0 | 145.0 | 139.0 |

Type of construction projected per adjusted Ontario trend in 1971-1978.

## INPUT FACTORS

The input factors derived from the studies of the Thunder Bay and the Sudbury areas, adjusted to metric tonnes and 1971 constant dollars, and calculated averages have been found satisfactory for calculating the demand for mineral aggregate in Northwestern Ontario Economic Region.

With the exception of the input factor for non-road engineering construction which is very similar to Ontario's standard, the remaining input factors for Northwestern Ontario indicate a considerably higher consumption of mineral aggregate than the standard of consumption in the Province as a whole.

The construction value by type adjusted by patterns determined in the Sudbury and Thunder Bay aggregate studies and multiplied by the input factors yield the demand for aggregates for construction in the Region. In addition, an estimate based on requirements of major mines in the area, has been prepared for mine backfill requirement; and, other than construction, uses of mineral aggregate have been estimated on a per capita basis.

Total demand for mineral aggregate for years 1978 through 1981 in Northwestern Ontario Economic Region under the two scenarios, in thousands of metric tonnes, is as follows:

SCENARIO "A"

| 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 4,692 | 4,444 | 4,765 | 4,535 | 4,824 | 4,546 | 4,897 | 4,620 |

SCENARIO "B"

| 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|
| High | Low | High | Low | High | Low | High | Low |
| 4,356 | 4,126 | 4,355 | 4,125 | 4,339 | 4,079 | 4,354 | 4,094 |

TABLE 3

## DEMAND FOR MINERAL AGGREGATE IN NORTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

SCENARIO A

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Mine Fill & Miscellaneous Uses | 1,151 | 1,036 | 1,151 | 1,036 | 1,151 | 1,036 | 1,151 | 1,036 |
| Residential Building | 436 | 420 | 446 | 430 | 452 | 433 | 461 | 442 |
| Non-Residential Building | 411 | 397 | 421 | 406 | 426 | 408 | 436 | 421 |
| Roads, Hwys., Aerodrome | 1,986 | 1,910 | 2,024 | 1,967 | 2,062 | 1,967 | 2,100 | 2,005 |
| Non-Road Engineering | 708 | 681 | 723 | 696 | 733 | 702 | 749 | 716 |
| TOTAL CONSTRUCTION | 4,692 | 4,444 | 4,765 | 4,535 | 4,824 | 4,546 | 4,897 | 4,620 |

Type of construction determined per adjusted Ontario average in 1971-1978.

TABLE 4

## DEMAND FOR MINERAL AGGREGATE IN NORTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

SCENARIO B

| Type of Construction | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Mine Fill & Miscellaneous Uses | 1,151 | 1,036 | 1,151 | 1,036 | 1,151 | 1,036 | 1,151 | 1,036 |
| Residential Building | 452 | 435 | 471 | 454 | 487 | 468 | 507 | 487 |
| Non-Residential Building | 298 | 287 | 275 | 265 | 272 | 260 | 268 | 257 |
| Roads, Hwys., Aerodrome | 1,623 | 1,566 | 1,585 | 1,528 | 1,547 | 1,470 | 1,528 | 1,451 |
| Non-Road Engineering | 832 | 802 | 873 | 842 | 882 | 845 | 900 | 863 |
| TOTAL CONSTRUCTION | 4,356 | 4,126 | 4,355 | 4,125 | 4,339 | 4,079 | 4,354 | 4,094 |

Type of construction projected per adjusted Ontario trend in 1971-1978.

## DEMAND FORECAST FOR MINERAL AGGREGATE IN TERRITORIAL DISTRICTS

Demand for mineral aggregate in Northwestern Ontario Economic Region is distributed to Territorial Districts in the following manner:

a) Residential and Non-Residential Building demand is allocated on the basis of building permit ratios.

b) Assuming that Non-Road Engineering Construction is directly related to the total Building Construction, the sub-regional allocations are made on the basis of distribution of the total Building Construction in the Region.

c) The Road Engineering construction, repair and maintenance is forecast for the Territorial Districts of Northwestern Ontario Economic Region on the basis of estimated share of the demand based on the analyses of the respective areas, population, density and road systems.

d) The demand for mineral aggregate for flux and mine backfill was derived from information on major mining operations in the respective areas under study and the Proctor and Redfern Mineral Aggregate Study for the Sudbury area.

The total demand forecast for each Territorial (Administrative) District in Northwestern Ontario Economic Region for the years 1978-1981 is detailed in Tables 5 and 6.

e) The demand for miscellaneous uses is determined as a residual balance between provincial production and consumption and allocated on the basis of population distribution ratios.

TABLE 5 SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATES IN NORTHWESTERN ONTARIO ECONOMIC REGION, BY DISTRICTS, 1978-1981

SCENARIO A

| Territorial District | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Kenora | 1,016 | 964 | 1,027 | 979 | 1,130 | 1,066 | 1,228 | 1,162 |
| Rainy River | 524 | 487 | 502 | 468 | 518 | 480 | 506 | 468 |
| Thunder Bay | 3,152 | 2,993 | 3,236 | 3,088 | 3,176 | 3,000 | 3,163 | 2,990 |
| TOTAL | 4,692 | 4,444 | 4,765 | 4,535 | 4,824 | 4,546 | 4,897 | 4,620 |



TABLE 6 SUMMARY OF DEMAND FORECAST FOR MINERAL AGGREGATES IN NORTHWESTERN ONTARIO ECONOMIC REGION, BY DISTRICTS, 1978-1981

SCENARIO B

| Territorial District | 1978 | | 1979 | | 1980 | | 1981 | |
|---|---|---|---|---|---|---|---|---|
| | High | Low | High | Low | High | Low | High | Low |
| | (Thousands of Tonnes) | | | | | | | |
| Kenora | 925.5 | 877.6 | 925.5 | 877.5 | 1,009.8 | 951.0 | 1,100.9 | 1,038.6 |
| Rainy River | 485.4 | 452.4 | 458.1 | 426.0 | 466.2 | 431.5 | 450.4 | 416.2 |
| Thunder Bay | 2,945.1 | 2,796.0 | 2,971.4 | 2,821.5 | 2,863.0 | 2,696.5 | 2,802.7 | 2,639.2 |
| TOTAL | 4,356.0 | 4,126.0 | 4,355.0 | 4,125.0 | 4,339.0 | 2,696.5 | 4,354.0 | 4,094.0 |

## FORECAST CONTROL

The forecast control scenario for estimating the cost of building construction and for breaking-up the total cost of the construction by category is based on the value of building permits issued for the building construction. It is assumed that the 1971-1978 ratio of the value of building permits in Ontario to the actual cost of building construction is sufficiently valid for estimating the cost of building construction in Northwestern Ontario for the 1978-1981 period. The road engineering construction and the non-road engineering construction are determined on the basis of their historical average relationship to total building construction modified by the 1971-1978 trends.

The value of Residential and Non-Residential Building Construction for Northwestern Ontario is estimated from the projected value of Northwestern Ontario building permits adjusted by the appropriate ratios of Ontario's value of building permits to its cost of construction.

### ESTIMATED VALUE OF BUILDING PERMITS AND COST OF BUILDING CONSTRUCTION IN NORTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| Year | Forecast Value of Permits | Ratio of Permits to Cost of Construction | Estimated Value of Construction | |
|---|---|---|---|---|
| | | (1971 Constant Dollars in Thousands) | | |
| Residential Building | | | High | Low |
| 1978 | 32,852 | 71.9 | 45,691 | 41,122 |
| 1979 | 25,890 | 69.3 | 37,359 | 33,623 |
| 1980 | 35,594 | 67.4 | 52,810 | 47,529 |
| 1981 | 36,857 | 65.4 | 56,356 | 50,720 |
| Non-Residential Building | | | | |
| 1978 | 27,059 | 93.2 | 29,033 | 26,130 |
| 1979 | 20,511 | 86.4 | 23,740 | 21,366 |
| 1980 | 22,517 | 86.3 | 26,092 | 23,483 |
| 1981 | 21,399 | 86.3 | 24,796 | 22,316 |

The low total is calculated at a 10% deviation from the high total.

The value of Non-Road Engineering Construction is estimated on a ratio basis of Non-Road Engineering Construction Expenditures in the 1971-1978 period to the total value of both Residential and Non-Residential Building Construction in that period. This calculated ratio averaging 0.396:1 of expenditure on Building Construction in the 1971-1978 period is applied to above estimated values of total Building Construction in the years 1978 to 1981 to yield an estimated value of Non-Road Engineering Construction Expenditure. This approach to forecasting assumes that Non-Road Engineering Construction is a complementary service activity directly related to Residential and Non-Residential Building Construction.

| Year | Total Building Construction | Ratio | Estimated Value of Non-Road Engineering | |
|---|---|---|---|---|
| | (1971 Constant Dollars in Thousands) | | | |
| Non-Road Engineering | | | High | Low |
| 1978 | 74,724 | 0.396 | 29,591 | 26,632 |
| 1979 | 61,099 | 0.396 | 24,195 | 21,775 |
| 1980 | 78,902 | 0.396 | 31,245 | 28,121 |
| 1981 | 81,152 | 0.396 | 32,136 | 28,922 |

**Total Road Construction**

(Determined per Ontario's average modified by Ontario's trend in the high alternative.)

| | | |
|---|---|---|
| 1978 | 9,500 | 8,550 |
| 1979 | 9,500 | 8,550 |
| 1980 | 9,400 | 8,460 |
| 1981 | 9,500 | 8,550 |

The low total is calculated at a 10% deviation from the high total.

TABLE 7 ESTIMATE OF ANNUAL AVERAGE USE OF MINERAL AGGREGATE FOR MINE FILL MNR AND OTHER USES IN NORTHWESTERN ONTARIO, 1978-1981

| District | | Estimated Total Annual Requirement 1978-1981 | |
|---|---|---|---|
| | | (Thousands of Tonnes) | |
| | | High | Low |
| Kenora District | (Campbell Red Lake, Dickensons, MNR) | 246.0 | 221.4 |
| Rainy River District | (MNR and miscellaneous uses) | 260.0 | 234.0 |
| Thunder Bay District | (Inco, Geco, MNR) | 645.0 | 580.5 |
| Mines TOTAL | | 1151.0 | 1035.9 |

TABLE 8 CONTROL OF DEMAND FORECAST FOR MINERAL AGGREGATES IN NORTHWESTERN ONTARIO ECONOMIC REGION, 1978-1981

| Year | Residential Building | Non-Residential Building | Roads, Hwys., Aerodromes | Non-Road Engineering | Mine Fill | Total Construction |
|---|---|---|---|---|---|---|
| | | | (Tonnes) | | | |
| 1978 | | | | | | |
| Sand & Gravel | 224,351 | 216,523 | 990,478 | 238,295 | 628,446 | 2,298,093 |
| Stone | 186,548 | 180,039 | 823,585 | 198,143 | 522,554 | 1,910,869 |
| High total | 410,899 | 396,562 | 1,814,063 | 436,438 | 1,151,000 | 4,208,962 |
| Sand & Gravel | 201,916 | 194,873 | 891,431 | 214,466 | 565,601 | 2,068,287 |
| Stone | 167,894 | 162,037 | 741,226 | 178,329 | 470,299 | 1,719,785 |
| Low total | 369,810 | 356,910 | 1,632,657 | 392,795 | 1,035,900 | 3,788,072 |
| 1979 | | | | | | |
| Sand & Gravel | 183,353 | 177,049 | 990,478 | 194,841 | 628,446 | 2,174,167 |
| Stone | 152,616 | 147,216 | 823,585 | 162,011 | 522,554 | 1,807,982 |
| High total | 335,969 | 324,265 | 1,814,063 | 356,852 | 1,151,000 | 3,982,149 |
| Sand & Gravel | 165,095 | 159,344 | 891,431 | 175,353 | 565,601 | 1,956,824 |
| Stone | 137,277 | 132,494 | 741,226 | 145,806 | 470,299 | 1,627,102 |
| Low total | 302,372 | 291,838 | 1,632,657 | 321,159 | 1,035,900 | 3,583,926 |
| 1980 | | | | | | |
| Sand & Gravel | 259,306 | 194,589 | 980,053 | 251,615 | 628,446 | 2,314,009 |
| Stone | 215,614 | 161,802 | 814,915 | 209,218 | 522,554 | 1,924,103 |
| High total | 474,920 | 356,391 | 1,794,968 | 460,833 | 1,151,000 | 4,238,112 |
| Sand & Gravel | 233,376 | 171,132 | 882,047 | 226,457 | 565,601 | 2,078,613 |
| Stone | 194,052 | 149,622 | 733,424 | 188,300 | 470,299 | 1,735,697 |
| Low total | 427,428 | 320,754 | 1,615,471 | 414,757 | 1,035,900 | 3,814,310 |
| 1981 | | | | | | |
| Sand & Gravel | 276,718 | 184,924 | 990,478 | 258,790 | 628,446 | 2,339,356 |
| Stone | 230,092 | 153,765 | 823,585 | 215,184 | 522,554 | 1,945,180 |
| High total | 506,810 | 338,689 | 1,814,063 | 473,974 | 1,151,000 | 4,284,536 |
| Sand & Gravel | 249,044 | 166,428 | 891,431 | 232,908 | 565,601 | 2,105,412 |
| Stone | 207,081 | 138,386 | 741,226 | 193,663 | 470,299 | 1,750,655 |
| Low total | 456,125 | 304,814 | 1,632,657 | 426,571 | 1,035,900 | 3,856,067 |

# APPENDIX I
# CENTRAL ONTARIO ECONOMIC REGION

TABLE I/1

## RETAIL SALES IN CENTRAL ONTARIO ECONOMIC REGION BY REGIONAL MUNICIPALITIES AND COUNTIES 1971-1977

(1971 Constant Dollars in Millions)

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1971-77 Annual Average | 1976-77 Annual Average |
|---|---|---|---|---|---|---|---|---|---|
| **Regional Municipalities** | | | | | | | | | |
| Durham | 319.2 | 319.0 | 348.0 | 332.0 | 336.0 | 381.0 | 388.9 | 346.3 | 384.9 |
| Haldimand-Norfolk | 113.7 | 113.0 | 122.0 | 115.0 | 116.0 | 131.0 | 125.0 | 119.4 | 128.0 |
| Halton | 247.8 | 244.0 | 278.0 | 269.0 | 276.0 | 313.0 | 369.2 | 285.3 | 341.1 |
| Muskoka | 56.4 | 56.0 | 62.0 | 59.0 | 60.0 | 68.0 | 74.0 | 62.2 | 71.0 |
| Niagara | 514.4 | 515.0 | 550.0 | 519.0 | 521.0 | 591.0 | 553.1 | 537.6 | 572.0 |
| Peel | 388.3 | 392.0 | 456.0 | 451.0 | 472.0 | 535.0 | 566.6 | 465.8 | 550.8 |
| Waterloo | 392.7 | 394.0 | 432.0 | 414.0 | 422.0 | 478.0 | 502.7 | 433.6 | 490.4 |
| Hamilton-Wentworth | 648.7 | 656.0 | 688.0 | 647.0 | 648.0 | 735.0 | 645.6 | 666.9 | 690.3 |
| York | 3,910.3 | 3,889.0 | 4,238.0 | 4,028.0 | 4,074.0 | 4,140.5 | 3,987.9 | 4,038.2 | 4,064.2 |
| TOTAL | 6,591.5 | 6,578.0 | 7,174.0 | 6,834.0 | 6,925.0 | 7,372.5 | 7,213.0 | 6,955.3 | 7,292.7 |
| **Counties** | | | | | | | | | |
| Brant | 143.2 | 143.0 | 153.0 | 144.0 | 145.0 | 164.0 | 139.5 | 147.4 | 151.8 |
| Dufferin | 28.4 | 28.0 | 32.0 | 31.0 | 32.0 | 36.0 | 39.7 | 32.4 | 37.8 |
| Haliburton | 14.7 | 15.0 | 16.0 | 14.0 | 16.0 | 18.0 | 18.0 | 16.0 | 18.0 |
| Northumberland | 61.3 | 61.0 | 66.0 | 62.0 | 62.0 | 70.0 | 70.5 | 64.7 | 70.3 |
| Peterborough | 143.7 | 143.0 | 154.0 | 145.0 | 146.0 | 165.0 | 170.1 | 152.4 | 167.5 |
| Simcoe | 253.8 | 254.0 | 278.0 | 265.0 | 269.0 | 305.0 | 350.0 | 282.1 | 327.5 |
| Victoria | 51.5 | 51.0 | 56.0 | 53.0 | 53.0 | 53.0 | 70.1 | 56.4 | 65.1 |
| Wellington | 145.4 | 145.0 | 159.0 | 152.0 | 155.0 | 175.0 | 184.1 | 159.4 | 179.5 |
| TOTAL | 842.0 | 840.0 | 914.0 | 866.0 | 878.0 | 993.0 | 1,042.0 | 910.8 | 1,017.5 |
| **Central Ontario Planning Region** | 7,433.5 | 7,418.0 | 8,088.0 | 7,700.0 | 7,803.0 | 8,365.5 | 8,255.0 | 7,866.1 | 8,310.2 |

TABLE I/2 RETAIL SALES PER CAPITA IN CENTRAL ONTARIO ECONOMIC REGION

(In 1971 Constant Dollars)

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1971-77 Annual Average | 1976-77 Annual Average |
|---|---|---|---|---|---|---|---|---|---|
| **Ontario** | 1,542 | 1,514 | 1,618 | 1,506 | 1,497 | 1,620 | 1,575 | 1,553 | 1,598 |
| **Central Ontario** | 1,601 | 1,567 | 1,678 | 1,567 | 1,555 | 1,643 | 1,592 | 1,600 | 1,618 |
| **Regional Municipalities** | | | | | | | | | |
| Durham | 1,441 | 1,410 | 1,506 | 1,408 | 1,397 | 1,553 | 1,553 | 1,467 | 1,553 |
| Haldimand-Norfolk | 1,310 | 1,289 | 1,433 | 1,284 | 1,282 | 1,412 | 1,352 | 1,337 | 1,382 |
| Halton | 1,301 | 1,240 | 1,369 | 1,285 | 1,169 | 1,411 | 1,614 | 1,341 | 1,513 |
| Muskoka | 1,766 | 1,737 | 1,905 | 1,797 | 1,810 | 2,033 | 2,183 | 1,890 | 2,108 |
| Niagara | 1,481 | 1,466 | 1,548 | 1,444 | 1,434 | 1,609 | 1,487 | 1,496 | 1,548 |
| Peel | 1,497 | 1,436 | 1,594 | 1,501 | 1,503 | 1,633 | 1,655 | 1,546 | 1,644 |
| Waterloo | 1,546 | 1,509 | 1,610 | 1,503 | 1,493 | 1,650 | 1,692 | 1,572 | 1,671 |
| Hamilton-Wentworth | 1,614 | 1,619 | 1,684 | 1,571 | 1,561 | 1,756 | 1,530 | 1,619 | 1,643 |
| York | 1,736 | 1,697 | 1,818 | 1,698 | 1,689 | 1,688 | 1,600 | 1,704 | 1,644 |
| TOTAL | 1,629 | 1,594 | 1,707 | 1,594 | 1,580 | 1,657 | 1,592 | 1,622 | 1,625 |
| **Counties** | | | | | | | | | |
| Brant | 1,480 | 1,458 | 1,540 | 1,431 | 1,422 | 1,588 | 1,333 | 1,465 | 1,461 |
| Dufferin | 1,340 | 1,295 | 1,452 | 1,381 | 1,399 | 1,546 | 1,669 | 1,440 | 1,608 |
| Haliburton | 1,619 | 1,631 | 1,718 | 1,485 | 1,676 | 1,864 | 1,838 | 1,690 | 1,851 |
| Northumberland | 1,035 | 1,022 | 1,096 | 1,022 | 1,014 | 1,136 | 1,131 | 1,065 | 1,134 |
| Peterborough | 1,569 | 1,532 | 1,634 | 1,523 | 1,519 | 1,701 | 1,735 | 1,602 | 1,718 |
| Simcoe | 1,445 | 1,424 | 1,534 | 1,440 | 1,440 | 1,608 | 1,814 | 1,529 | 1,711 |
| Victoria | 1,406 | 1,385 | 1,513 | 1,425 | 1,418 | 1,597 | 1,846 | 1,513 | 1,722 |
| Wellington | 1,339 | 1,306 | 1,401 | 1,311 | 1,309 | 1,448 | 1,488 | 1,372 | 1,468 |
| TOTAL | 1,407 | 1,381 | 1,482 | 1,384 | 1,384 | 1,544 | 1,595 | 1,454 | 1,570 |

**TABLE I/3** **DISPOSABLE INCOME IN CENTRAL ONTARIO ECONOMIC REGION BY REGIONAL MUNICIPALITIES AND COUNTIES, 1971-1977**

**(1971 Constant Dollars in Millions)**

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1971-77 Annual Average | 1976-77 Annual Average |
|---|---|---|---|---|---|---|---|---|---|
| **Regional Municipalities** | | | | | | | | | |
| Durham | 799.9 | 794.0 | 886.0 | 920.0 | 945.0 | 981.0 | 1,023.1 | 907.0 | 1,002.1 |
| Haldimand-Norfolk | 155.5 | 160.0 | 173.0 | 180.0 | 177,0 | 276.0 | 263.0 | 197.8 | 269.5 |
| Halton | 913.7 | 892.0 | 1,027.0 | 1,067.0 | 1,112.0 | 1,078.0 | 1,137.7 | 1,032.5 | 1,107.9 |
| Muskoka | 54.6 | 55.0 | 62.0 | 65.0 | 68.0 | 99.0 | 105.0 | 72.7 | 102.0 |
| Niagara | 1,118.5 | 1,123.0 | 1,235.0 | 1,261.0 | 1,292.0 | 1,322.0 | 1,370.6 | 1,246.0 | 1,346.3 |
| Peel | 1,061.3 | 1,085.0 | 1,272.0 | 1,368.0 | 1,472.0 | 1,745.0 | 1,906.8 | 1,415.7 | 1,825.9 |
| Waterloo | 748.4 | 748.0 | 830.0 | 873.0 | 904.0 | 1,005.0 | 1,048.9 | 879.6 | 1,026.9 |
| Hamilton-Wentworth | 1,283.7 | 1,282.0 | 1,338.0 | 1,369.0 | 1,407.0 | 1,504.0 | 1,549.6 | 1,390.5 | 1,526.8 |
| York | 7,533.2 | 7,345.0 | 8,064.0 | 8,332.0 | 8,692.0 | 9,265.0 | 9,688.0 | 8,417.0 | 9,476.5 |
| TOTAL | 13,668.8 | 13,484.0 | 14,887.0 | 15,435.0 | 16,069.0 | 17,275.0 | 18,092.7 | 15,558.8 | 17,683.9 |
| **Counties** | | | | | | | | | |
| Brant | 264.5 | 262.0 | 283.0 | 289.0 | 296.0 | 322.0 | 324.3 | 291.5 | 323.2 |
| Dufferin | 38.5 | 41.0 | 48.0 | 56.0 | 53.0 | 82.0 | 85.1 | 57.7 | 83.5 |
| Haliburton | 18.5 | 18.0 | 21.0 | 22.0 | 23.0 | 25.0 | 27.1 | 22.1 | 26.1 |
| Northumberland | 112.8 | 115.0 | 127.0 | 132.0 | 133.0 | 154.0 | 157.4 | 133.0 | 155.7 |
| Peterborough | 269.0 | 268.0 | 289.0 | 297.0 | 303.0 | 319.0 | 332.4 | 296.8 | 325.7 |
| Simcoe | 416.4 | 426.0 | 468.0 | 497.0 | 509.0 | 611.0 | 643.4 | 510.1 | 627.2 |
| Victoria | 69.8 | 71.0 | 79.0 | 85.0 | 84.0 | 106.0 | 110.1 | 86.4 | 108.0 |
| Wellington | 278.9 | 284.0 | 317.0 | 340.0 | 341.0 | 392.0 | 399.0 | 336.0 | 395.5 |
| TOTAL | 1,468.4 | 1,485.0 | 1,632.0 | 1,718.0 | 1,742.0 | 2,011.0 | 2,078.8 | 1,733.6 | 2,044.9 |
| **Central Ontario Planning Region** | 15,137.2 | 14,969.0 | 16,519.0 | 17,153.0 | 17,811.0 | 19,286.0 | 20,171.5 | 17,292.4 | 19,728.8 |

TABLE I/4

DISPOSABLE INCOME PER CAPITA IN CENTRAL ONTARIO ECONOMIC REGION, 1971-1977

(In 1971 Constant Dollars)

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1971-77 Annual Average | 1976-77 Annual Average |
|---|---|---|---|---|---|---|---|---|---|
| **Ontario** | 3,135 | 3,289 | 3,314 | 3,369 | 3,419 | 3,668 | 3,757 | 3,422 | 3,713 |
| **Central Ontario** | 3,259 | 3,162 | 3,425 | 3,492 | 3,561 | 3,789 | 3,892 | 3,511 | 3,841 |
| **Regional Municipalities** | | | | | | | | | |
| Durham | 3,611 | 3,509 | 3,835 | 3,902 | 3,929 | 4,000 | 4,086 | 3,839 | 4,043 |
| Haldimand-Norfolk | 1,792 | 1,825 | 1,952 | 2,010 | 1,957 | 3,020 | 2,845 | 2,200 | 2,933 |
| Halton | 4,797 | 4,534 | 5,058 | 5,098 | 5,158 | 4,859 | 4,975 | 4,926 | 4,917 |
| Muskoka | 1,710 | 1,706 | 1,905 | 1,979 | 2,052 | 2,960 | 3,098 | 2,201 | 3,029 |
| Niagara | 3,220 | 3,196 | 3,476 | 3,509 | 3,556 | 3,599 | 3,686 | 3,463 | 3,643 |
| Peel | 4,091 | 3,974 | 4,436 | 4,554 | 4,688 | 5,325 | 5,569 | 4,662 | 5,447 |
| Waterloo | 2,946 | 2,864 | 3,093 | 3,169 | 3,199 | 3,468 | 3,531 | 3,181 | 3,500 |
| Hamilton-Wentworth | 3,194 | 3,164 | 3,275 | 3,324 | 3,389 | 3,594 | 3,673 | 3,373 | 3,634 |
| York | 3,345 | 3,204 | 3,458 | 3,512 | 3,603 | 3,778 | 3,889 | 3,541 | 3,834 |
| TOTAL | 3,379 | 3,268 | 3,539 | 3,601 | 3,680 | 3,884 | 3,994 | 3,621 | 3,939 |
| **Counties** | | | | | | | | | |
| Brant | 2,733 | 2,672 | 2,848 | 2,871 | 2,903 | 3,119 | 3,098 | 2,892 | 3,109 |
| Dufferin | 1,816 | 1,897 | 2,178 | 2,494 | 2,318 | 3,521 | 3,578 | 2,543 | 3,550 |
| Haliburton | 2,037 | 1,957 | 2,255 | 2,333 | 2,410 | 2,588 | 2,767 | 2,335 | 2,678 |
| Northumberland | 1,905 | 1,926 | 2,110 | 2,175 | 2,175 | 2,498 | 2,525 | 2,188 | 2,512 |
| Peterborough | 2,911 | 2,871 | 3,066 | 3,121 | 3,153 | 3,288 | 3,391 | 3,114 | 3,340 |
| Simcoe | 2,371 | 2,388 | 2,582 | 2,701 | 2,724 | 3,222 | 3,335 | 2,760 | 3,279 |
| Victoria | 1,905 | 1,928 | 2,135 | 2,285 | 2,247 | 2,822 | 2,900 | 2,317 | 2,861 |
| Wellington | 2,569 | 2,558 | 2,793 | 2,932 | 2,880 | 3,243 | 3,226 | 2,886 | 3,235 |
| TOTAL | 2,449 | 2,442 | 2,646 | 2,746 | 2,746 | 3,128 | 3,183 | 2,763 | 3,156 |

TABLE I/5

## MARKET RATING INDEX
## REGIONAL MUNICIPALITIES AND COUNTIES IN CENTRAL ONTARIO ECONOMIC REGION, 1971-1977

| | 1971 | 1972 | 1973 | 1974 (%) | 1975 | 1976 | 1977 | 1971-77 Average | 1976-77 Average |
|---|---|---|---|---|---|---|---|---|---|
| **Central Ontario** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Regional Municipalities** | | | | | | | | | |
| Durham | 90.0 | 90.0 | 89.7 | 89.9 | 89.8 | 94.5 | 97.6 | 91.6 | 96.1 |
| Haldimand-Norfolk | 81.8 | 82.3 | 85.4 | 81.9 | 82.4 | 85.9 | 84.9 | 83.5 | 85.4 |
| Halton | 81.3 | 79.1 | 81.6 | 82.0 | 75.2 | 85.9 | 101.4 | 83.8 | 93.7 |
| Muskoka | 110.3 | 110.8 | 113.5 | 114.7 | 116.4 | 123.7 | 137.1 | 118.1 | 130.4 |
| Niagara | 92.5 | 93.6 | 92.3 | 92.2 | 92.2 | 97.9 | 93.4 | 93.4 | 95.7 |
| Peel | 93.5 | 91.6 | 95.0 | 95.8 | 96.7 | 99.4 | 104.0 | 96.6 | 101.7 |
| Waterloo | 96.6 | 96.3 | 95.9 | 95.9 | 96.0 | 100.4 | 106.3 | 98.2 | 103.4 |
| Hamilton-Wentworth | 100.8 | 103.3 | 100.4 | 100.3 | 100.4 | 106.9 | 96.1 | 101.2 | 101.5 |
| York | 108.4 | 108.3 | 108.3 | 108.4 | 108.6 | 102.7 | 100.5 | 106.5 | 101.6 |
| TOTAL | 101.7 | 101.7 | 101.7 | 101.7 | 101.6 | 100.9 | 100.0 | 101.3 | 100.5 |
| **Counties** | | | | | | | | | |
| Brant | 92.4 | 93.0 | 91.8 | 91.3 | 91.4 | 96.7 | 83.7 | 91.5 | 90.2 |
| Dufferin | 83.7 | 82.6 | 86.5 | 88.1 | 90.0 | 94.1 | 104.8 | 90.0 | 99.5 |
| Haliburton | 101.1 | 104.1 | 102.4 | 94.8 | 107.8 | 113.5 | 115.5 | 105.6 | 114.5 |
| Northumberland | 64.6 | 65.2 | 65.3 | 65.2 | 65.2 | 69.1 | 71.0 | 66.5 | 70.1 |
| Peterborough | 98.0 | 97.8 | 97.4 | 97.2 | 97.7 | 103.5 | 09.0 | 100.1 | 106.3 |
| Simcoe | 90.3 | 90.9 | 91.4 | 91.9 | 92.6 | 97.9 | 113.9 | 95.6 | 105.9 |
| Victoria | 87.8 | 88.4 | 90.2 | 90.9 | 91.2 | 97.2 | 116.0 | 94.5 | 106.6 |
| Wellington | 83.6 | 83.3 | 83.5 | 83.7 | 84.2 | 88.1 | 93.5 | 85.7 | 90.8 |
| TOTAL | 87.9 | 88.1 | 88.3 | 88.3 | 89.0 | 94.0 | 100.2 | 90.8 | 97.1 |

TABLE I/6

## INCOME RATING INDEX
## REGIONAL MUNICIPALITIES AND COUNTIES IN CENTRAL ONTARIO ECONOMIC REGION, 1971-1977

| | 1971 | 1972 | 1973 | 1974 (%) | 1975 | 1976 | 1977 | 1971-77 Average | 1976-77 Average |
|---|---|---|---|---|---|---|---|---|---|
| **Central Ontario** | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| **Regional Municipalities** | | | | | | | | | |
| Durham | 110.8 | 111.0 | 112.0 | 111.7 | 110.3 | 105.6 | 105.0 | 109.5 | 105.3 |
| Haldimand-Norfolk | 55.0 | 57.7 | 57.0 | 57.6 | 55.0 | 79.7 | 73.1 | 62.2 | 76.4 |
| Halton | 147.2 | 143.4 | 147.7 | 146.0 | 144.8 | 128.2 | 127.8 | 140.7 | 128.0 |
| Muskoka | 52.5 | 54.0 | 55.6 | 56.7 | 57.6 | 78.1 | 79.6 | 62.0 | 78.9 |
| Niagara | 98.8 | 101.1 | 101.5 | 100.5 | 99.9 | 95.0 | 94.7 | 98.8 | 94.9 |
| Peel | 125.5 | 125.7 | 129.5 | 130.4 | 131.6 | 140.5 | 143.1 | 132.3 | 141.8 |
| Waterloo | 90.4 | 90.6 | 90.3 | 90.8 | 89.8 | 91.5 | 90.7 | 90.6 | 91.1 |
| Hamilton-Wentworth | 98.0 | 100.1 | 95.6 | 95.2 | 95.2 | 94.9 | 94.4 | 96.2 | 94.7 |
| York | 102.6 | 101.3 | 101.0 | 100.6 | 101.2 | 99.7 | 99.9 | 100.9 | 99.8 |
| TOTAL | 103.7 | 103.4 | 103.3 | 103.1 | 103.3 | 102.5 | 102.6 | 103.1 | 102.6 |
| **Counties** | | | | | | | | | |
| Brant | 83.9 | 84.5 | 83.2 | 82.2 | 81.5 | 82.3 | 79.6 | 82.5 | 81.0 |
| Dufferin | 55.7 | 60.0 | 63.6 | 71.4 | 65.1 | 92.9 | 91.9 | 71.5 | 92.5 |
| Haliburton | 62.5 | 61.9 | 65.8 | 66.8 | 67.7 | 68.3 | 71.1 | 66.3 | 69.7 |
| Northumberland | 58.5 | 60.9 | 61.6 | 62.3 | 61.1 | 65.9 | 64.9 | 62.2 | 65.4 |
| Peterborough | 89.3 | 90.8 | 89.5 | 89.4 | 88.5 | 86.8 | 87.1 | 88.8 | 87.0 |
| Simcoe | 72.8 | 75.5 | 75.4 | 77.3 | 76.5 | 85.0 | 85.7 | 78.3 | 85.4 |
| Victoria | 58.5 | 61.0 | 62.3 | 65.4 | 63.1 | 74.5 | 74.5 | 65.6 | 74.5 |
| Wellington | 78.8 | 80.9 | 81.5 | 84.0 | 80.9 | 85.6 | 82.9 | 82.1 | 84.3 |
| TOTAL | 75.1 | 77.2 | 77.3 | 78.6 | 77.1 | 82.6 | 81.8 | 78.5 | 82.2 |

TABLE I/7 MARKET ATTRACTION INDEX

REGIONAL MUNICIPALITIES AND COUNTIES IN CENTRAL ONTARIO ECONOMIC REGION, 1971-1977

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1971-77 Average | 1976-77 Average |
|---|---|---|---|---|---|---|---|---|---|
| **Central Ontario** | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| **Regional Municipalities** | | | | | | | | | |
| Durham | 0.81 | 0.81 | 0.80 | 0.80 | 0.81 | 0.89 | 0.93 | 0.84 | 0.91 |
| Haldimand-Norfolk | 1.49 | 1.43 | 1.50 | 1.42 | 1.50 | 1.08 | 1.16 | 1.37 | 1.12 |
| Halton | 0.55 | 0.55 | 0.55 | 0.56 | 0.52 | 0.67 | 0.79 | 0.60 | 0.73 |
| Muskoka | 2.10 | 2.05 | 2.04 | 2.02 | 2.02 | 1.58 | 1.72 | 1.93 | 1.65 |
| Niagara | 0.94 | 0.93 | 0.91 | 0.92 | 0.92 | 1.03 | 0.99 | 0.95 | 1.01 |
| Peel | 0.75 | 0.73 | 0.73 | 0.73 | 0.73 | 0.71 | 0.73 | 0.73 | 0.72 |
| Waterloo | 1.07 | 1.06 | 1.06 | 1.06 | 1.07 | 1.10 | 1.17 | 1.08 | 1.14 |
| Hamilton-Wentworth | 1.03 | 1.03 | 1.05 | 1.05 | 1.05 | 1.13 | 1.02 | 1.05 | 1.08 |
| York | 1.06 | 1.07 | 1.07 | 1.08 | 1.07 | 1.03 | 1.01 | 1.06 | 1.02 |
| TOTAL | 0.98 | 0.98 | 0.98 | 0.99 | 0.98 | 0.98 | 0.97 | 0.98 | 0.98 |
| **Counties** | | | | | | | | | |
| Brant | 1.10 | 1.10 | 1.10 | 1.11 | 1.12 | 1.17 | 1.05 | 1.11 | 1.11 |
| Dufferin | 1.50 | 1.38 | 1.36 | 1.23 | 1.38 | 1.01 | 1.14 | 1.29 | 1.08 |
| Haliburton | 1.62 | 1.68 | 1.56 | 1.42 | 1.59 | 1.66 | 1.62 | 1.59 | 1.64 |
| Northumberland | 1.10 | 1.07 | 1.06 | 1.05 | 1.07 | 1.05 | 1.09 | 1.07 | 1.07 |
| Peterborough | 1.10 | 1.08 | 1.09 | 1.09 | 1.10 | 1.19 | 1.25 | 1.13 | 1.22 |
| Simcoe | 1.24 | 1.20 | 1.21 | 1.19 | 1.21 | 1.15 | 1.33 | 1.22 | 1.24 |
| Victoria | 1.50 | 1.45 | 1.45 | 1.39 | 1.45 | 1.30 | 1.56 | 1.44 | 1.43 |
| Wellington | 1.06 | 1.03 | 1.02 | 1.00 | 1.04 | 1.03 | 1.13 | 1.04 | 1.08 |
| TOTAL | 1.17 | 1.14 | 1.14 | 1.12 | 1.15 | 1.14 | 1.22 | 1.15 | 1.18 |

TABLE I/8

## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Durham | 1971 | 48,326 | 4.9 | 4,712 | 3.3 | 5,183 | 1.4 | 7,839 | 3.1 | 66,060 | 3.8 |
| | 1972 | 46,493 | 4.1 | 11,545 | 5.9 | 14,342 | 3.9 | 5,804 | 2.7 | 78,184 | 4.1 |
| | 1973 | 68,610 | 4.6 | 17,534 | 5.8 | 10,212 | 2.0 | 3,646 | 1.8 | 100,002 | 4.0 |
| | 1974 | 72,793 | 6.9 | 20,253 | 6.7 | 11,167 | 2.3 | 6,190 | 3.8 | 110,403 | 5.5 |
| | 1975 | 109,868 | 9.3 | 7,408 | 3.2 | 7,057 | 1.5 | 6,614 | 3.4 | 130,947 | 6.3 |
| | 1976 | 102,472 | 9.9 | 9,139 | 4.6 | 8,958 | 3.3 | 5,536 | 4.0 | 126,105 | 7.6 |
| | 1977 | 76,786 | 7.9 | 8,409 | 4.9 | 11,091 | 4.0 | 3,981 | 3.0 | 100,267 | 6.4 |
| | 1978 | 109,135 | 10.4 | 10,736 | 4.8 | 10,258 | 3.1 | 4,353 | 3.9 | 134,482 | 7.9 |
| | 1979 | 117,656 | 11.4 | 10,599 | 4.7 | 10,394 | 3.4 | 4,026 | 4.4 | 142,675 | 8.6 |
| | 1980 | 126,177 | 12.5 | 10,462 | 4.7 | 10,530 | 3.6 | 3,699 | 5.1 | 150,868 | 9.5 |
| Haldimand-Norfolk | 1971 | 9,262 | 1.0 | 960 | 0.7 | 1,254 | 0.3 | 945 | 0.4 | 12,421 | 0.7 |
| | 1972 | 9,065 | 0.8 | 1,729 | 0.9 | 2,139 | 0.5 | 411 | 0.2 | 13,344 | 0.7 |
| | 1973 | 14,245 | 0.9 | 3,228 | 1.1 | 4,781 | 0.9 | 788 | 0.4 | 23,042 | 0.9 |
| | 1974 | 12,006 | 1.1 | 3,125 | 1.0 | 2,457 | 0.5 | 1,167 | 0.7 | 18,755 | 0.9 |
| | 1975 | 20,949 | 1.8 | 38,696 | 16.9 | 2,025 | 0.4 | 1,653 | 0.8 | 63,323 | 3.1 |
| | 1976 | 13,363 | 1.3 | 2,788 | 1.4 | 3,031 | 1.1 | 1,484 | 1.1 | 20,666 | 1.3 |
| | 1977 | 9,745 | 1.0 | 2,385 | 1.4 | 1,538 | 0.5 | 905 | 0.7 | 14,573 | 0.9 |
| | 1978 | 15,055 | 1.5 | 13,539 | 6.0 | 2,443 | 0.7 | 1,463 | 1.3 | 32,500 | 1.9 |
| | 1979 | 15,653 | 1.5 | 15,034 | 6.7 | 2,439 | 0.8 | 1,567 | 1.7 | 34,693 | 2.1 |
| | 1980 | 16,251 | 1.6 | 16,529 | 7.3 | 2,435 | 0.8 | 1,670 | 2.3 | 36,885 | 2.3 |
| Halton | 1971 | 50,258 | 5.1 | 5,825 | 4.0 | 6,329 | 1.8 | 7,303 | 2.9 | 69,715 | 4.0 |
| | 1972 | 76,910 | 6.8 | 10,246 | 5.2 | 11,261 | 3.0 | 1,877 | 0.9 | 100,294 | 5.2 |
| | 1973 | 111,624 | 7.4 | 12,314 | 4.1 | 15,777 | 3.0 | 16,547 | 8.2 | 156,262 | 6.2 |
| | 1974 | 67,415 | 6.4 | 14,937 | 4.9 | 13,990 | 2.8 | 7,804 | 4.8 | 104,146 | 5.2 |
| | 1975 | 60,761 | 5.2 | 9,403 | 4.1 | 15,150 | 3.3 | 5,247 | 2.7 | 90,561 | 4.4 |
| | 1976 | 53,159 | 5.1 | 11,011 | 5.5 | 14,514 | 5.3 | 4,551 | 3.3 | 83,235 | 5.0 |
| | 1977 | 48,242 | 5.0 | 10,371 | 6.0 | 10,861 | 3.9 | 10,219 | 7.6 | 79,693 | 5.1 |

TABLE I/8 (cont'd)

## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1978 | 51,994 | 5.0 | 12,338 | 5.5 | 15,336 | 4.7 | 8,049 | 7.3 | 87,717 | 5.1 |
| | 1979 | 48,265 | 4.7 | 12,776 | 5.7 | 16,032 | 5.2 | 8,149 | 8.9 | 85,222 | 5.2 |
| | 1980 | 44,536 | 4.4 | 13,213 | 5.9 | 16,727 | 5.8 | 8,249 | 11.3 | 82,725 | 5.2 |
| Muskoka | 1971 | 10,828 | 1.1 | 237 | 0.2 | 2,561 | 0.7 | 101 | -- | 13,727 | 0.8 |
| | 1972 | 11,215 | 1.0 | 159 | 0.1 | 2,217 | 0.6 | 712 | 0.3 | 14,303 | 0.8 |
| | 1973 | 16,679 | 1.1 | 359 | 0.1 | 1,480 | 0.3 | 1,653 | 0.8 | 20,171 | 0.8 |
| | 1974 | 15,488 | 1.5 | 3,240 | 1.1 | 2,647 | 0.5 | 372 | 0.2 | 21,747 | 1.1 |
| | 1975 | 14,105 | 1.2 | 960 | 0.4 | 2,277 | 0.5 | 1,630 | 0.8 | 18,972 | 0.9 |
| | 1976 | 12,730 | 1.2 | 642 | 0.3 | 1,954 | 0.7 | 4,623 | 3.4 | 19,949 | 1.2 |
| | 1977 | 13,023 | 1.3 | 610 | 0.4 | 1,947 | 0.7 | 920 | 0.7 | 16.500 | 1.1 |
| | 1978 | 14,444 | 1.4 | 1,271 | 0.6 | 1,930 | 0.6 | 2,895 | 2.6 | 20,540 | 1.2 |
| | 1979 | 14,696 | 1.4 | 1,366 | 0.6 | 1,874 | 0.6 | 3,262 | 3.6 | 21,198 | 1.3 |
| | 1980 | 14,947 | 1.5 | 1,462 | 0.7 | 1,818 | 0.6 | 3,628 | 5.0 | 21,855 | 1.4 |
| Niagara | 1971 | 53,343 | 5.4 | 7,575 | 5.2 | 9,393 | 2.6 | 18,304 | 7.1 | 88,615 | 5.1 |
| | 1972 | 72,656 | 6.4 | 8,118 | 4.1 | 22,893 | 6.1 | 12,124 | 5.6 | 115,791 | 6.1 |
| | 1973 | 77,615 | 5.2 | 11,679 | 3.8 | 35,991 | 6.8 | 6,915 | 3.4 | 132,200 | 5.2 |
| | 1974 | 75,370 | 7.1 | 8,442 | 2.8 | 16,556 | 3.4 | 4,053 | 2.5 | 104,421 | 5.2 |
| | 1975 | 73,062 | 6.2 | 11,005 | 4.8 | 17,941 | 3.9 | 10,162 | 5.2 | 112,170 | 5.4 |
| | 1976 | 72,830 | 7.0 | 9,640 | 4.9 | 19,438 | 7.0 | 3,333 | 2.4 | 105,241 | 6.4 |
| | 1977 | 54,347 | 5.6 | 8,848 | 5.1 | 12,145 | 4.3 | 4,457 | 3.3 | 79,797 | 5.1 |
| | 1978 | 68,290 | 6.5 | 10,214 | 4.6 | 16,808 | 5.2 | 496 | 0.4 | 95,808 | 5.6 |
| | 1979 | 68,248 | 6.7 | 10,435 | 4.7 | 16,211 | 5.3 | -1,499 | -1.6 | 93,395 | 5.7 |
| | 1980 | 68,205 | 6.8 | 10,656 | 4.7 | 15,614 | 5.4 | -3,495 | -4.8 | 90,980 | 5.7 |

TABLE 4.8 (cont'd) BUILDING PERMITS ISSUED IN CENTRAL ONTARIO
(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Peel | 1971 | 103,232 | 10.5 | 28,171 | 19.5 | 25,561 | 7.1 | 23,885 | 9.3 | 180,849 | 10.4 |
| | 1972 | 158,762 | 14.1 | 30,472 | 15.5 | 34,784 | 9.3 | 17,961 | 8.3 | 241,979 | 12.6 |
| | 1973 | 248,299 | 16.6 | 78,427 | 25.7 | 34,526 | 6.6 | 9,179 | 4.5 | 370,431 | 14.6 |
| | 1974 | 136,399 | 12.9 | 63,575 | 20.9 | 18,586 | 3.8 | 12,892 | 7.9 | 231,452 | 11.5 |
| | 1975 | 165,681 | 14.1 | 34,905 | 15.2 | 14,975 | 3.2 | 14,274 | 7.3 | 229,835 | 11.1 |
| | 1976 | 196,118 | 18.9 | 52,294 | 26.3 | 26,752 | 9.7 | 11,071 | 8.0 | 286.235 | 17.3 |
| | 1977 | 188,689 | 19.4 | 33,604 | 19.5 | 26,955 | 9.6 | 13,235 | 9.9 | 262,483 | 16.8 |
| | 1978 | 206,521 | 19.8 | 48,267 | 21.6 | 21,529 | 6.6 | 8,837 | 8.0 | 285,154 | 16.7 |
| | 1979 | 215,394 | 21.0 | 48,853 | 21.8 | 20,407 | 6.6 | 7,386 | 8.0 | 292,040 | 17.7 |
| | 1980 | 224,268 | 22.2 | 49,440 | 22.0 | 19,284 | 6.6 | 5,935 | 8.1 | 298,927 | 18.7 |
| Waterloo | 1971 | 48,259 | 4.9 | 7,432 | 5.1 | 7,042 | 2.0 | 13,177 | 5.1 | 75,910 | 4.4 |
| | 1972 | 70,198 | 6.2 | 11,429 | 5.8 | 22,779 | 6.1 | 8,894 | 4.1 | 113,300 | 5.9 |
| | 1973 | 79,908 | 5.3 | 10,431 | 3.4 | 17,506 | 3.3 | 9,915 | 4.9 | 117,760 | 4.7 |
| | 1974 | 62,333 | 5.9 | 16,900 | 5.6 | 12,807 | 2.6 | 4,821 | 2.9 | 96,861 | 4.8 |
| | 1975 | 78,199 | 6.7 | 9,484 | 4.1 | 13,803 | 3.0 | 4,898 | 2.5 | 106,384 | 5.1 |
| | 1976 | 69,963 | 6.7 | 11,599 | 5.8 | 19,562 | 7.1 | 7,323 | 5.3 | 108,447 | 6.6 |
| | 1977 | 54,774 | 5.6 | 8,373 | 4.9 | 16,223 | 5.8 | 5,415 | 4.0 | 84,785 | 5.4 |
| | 1978 | 68,714 | 6.6 | 11,124 | 5.0 | 18,161 | 5.6 | 3,285 | 3.0 | 101,284 | 5.9 |
| | 1979 | 69,335 | 6.7 | 11,203 | 5.0 | 18,782 | 6.1 | 2,162 | 2.4 | 101,482 | 6.1 |
| | 1980 | 69,955 | 6.9 | 11,282 | 5.0 | 19,404 | 6.7 | 1,039 | 1.4 | 101,680 | 6.4 |
| Hamilton- | 1971 | 55,870 | 5.7 | 6,239 | 4.3 | 14,210 | 3.9 | 11,973 | 4.7 | 88,292 | 5.1 |
| | 1972 | 64,213 | 5.7 | 6,836 | 3.5 | 27,359 | 7.3 | 8,692 | 4.0 | 107,100 | 5.6 |
| | 1973 | 69,742 | 4.7 | 11,319 | 3.7 | 15,004 | 2.8 | 9,885 | 4.9 | 105,950 | 4.2 |
| | 1974 | 67,120 | 6.4 | 21,456 | 7.1 | 25,081 | 5.1 | 10,413 | 6.3 | 124,070 | 6.1 |
| | 1975 | 81,087 | 6.9 | 19,870 | 8.7 | 17,829 | 3.8 | 22,063 | 11.2 | 140,849 | 6.8 |

TABLE I/8 (cont'd)

## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1976 | 52,650 | 5.1 | 14,688 | 7.4 | 11,410 | 4.1 | 8,398 | 6.1 | 87,146 | 5.3 |
| | 1977 | 46,223 | 4.7 | 19,959 | 11.6 | 14,002 | 5.0 | 6,927 | 5.2 | 87,111 | 5.6 |
| | 1978 | 56,598 | 5.4 | 23,683 | 10.6 | 13,600 | 4.2 | 10,686 | 9.6 | 104,567 | 6.1 |
| | 1979 | 55,143 | 5.4 | 26,019 | 11.6 | 12,539 | 4.1 | 10,559 | 11.5 | 104,260 | 6.3 |
| | 1980 | 53,689 | 5.3 | 28,356 | 12.6 | 11,478 | 3.9 | 10,433 | 14.4 | 103,956 | 6.5 |
| York | 1971 | 488,261 | 49.7 | 73,823 | 51.1 | 266,435 | 74.2 | 139,974 | 54.5 | 968,493 | 55.5 |
| | 1972 | 501,521 | 44.4 | 99,960 | 51.0 | 216,145 | 57.9 | 131,218 | 60.3 | 948,844 | 49.5 |
| | 1973 | 628,732 | 42.1 | 128,422 | 42.1 | 351,861 | 66.8 | 120,073 | 59.3 | 1,229,088 | 48.6 |
| | 1974 | 374,943 | 35.4 | 116,539 | 38.4 | 356,877 | 72.1 | 88,724 | 54.1 | 937,083 | 46.4 |
| | 1975 | 387,412 | 33.0 | 81,849 | 35.7 | 347,078 | 74.6 | 111,482 | 56.5 | 927,821 | 44.9 |
| | 1976 | 312,170 | 30.0 | 68,703 | 34.6 | 145,819 | 52.8 | 81,256 | 59.1 | 607,948 | 36.8 |
| | 1977 | 353,686 | 36.3 | 64,871 | 37.5 | 153,573 | 54.9 | 75,333 | 56.2 | 647,463 | 41.5 |
| York | 1978 | 288,997 | 27.6 | 71,175 | 31.8 | 193,395 | 59.4 | 63,660 | 57.4 | 617,227 | 36.2 |
| | 1979 | 252,434 | 24.6 | 66,320 | 29.6 | 176,109 | 57.2 | 52,859 | 57.6 | 547,722 | 33.2 |
| | 1980 | 215,872 | 21.4 | 61,465 | 27.4 | 158,822 | 54.7 | 42,058 | 57.8 | 478,217 | 30.0 |
| County | | | | | | | | | | | |
| Brant | 1971 | 8,435 | 0.9 | 1,296 | 0.9 | 1,634 | 0.5 | 1,822 | 0.7 | 13,187 | 0.8 |
| | 1972 | 10,393 | 0.9 | 3,301 | 1.7 | 2,469 | 0.7 | 1,828 | 0.8 | 17,991 | 0.9 |
| | 1973 | 20,293 | 1.4 | 7,376 | 2.4 | 7,134 | 1.4 | 2,072 | 1.0 | 36,875 | 1.5 |
| | 1974 | 19,093 | 1.8 | 12,280 | 4.0 | 2,504 | 0.5 | 2,412 | 1.4 | 36,289 | 1.8 |
| | 1975 | 29,638 | 2.5 | 2,978 | 1.3 | 2,881 | 0.6 | 685 | 0.3 | 36,182 | 1.8 |
| | 1976 | 23,560 | 2.3 | 6,868 | 3.5 | 2,316 | 0.8 | 704 | 0.5 | 33,448 | 2.0 |
| | 1977 | 22,817 | 2.3 | 2,324 | 1.3 | 3,306 | 1.2 | 2,698 | 2.0 | 31,145 | 2.0 |
| | 1978 | 30,436 | 2.9 | 6,035 | 2.7 | 3,243 | 1.0 | 1,602 | 1.5 | 41,316 | 2.4 |
| | 1979 | 33,251 | 3.2 | 6,243 | 2.8 | 3,259 | 1.0 | 1,566 | 1.7 | 44,319 | 2.7 |
| | 1980 | 36,067 | 3.6 | 6,450 | 2.9 | 3,276 | 1.1 | 1,530 | 2.1 | 47,323 | 3.0 |

TABLE I/8 (cont'd)

## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| County | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dufferin | 1971 | 2,565 | 0.3 | 142 | 0.1 | 548 | 0.2 | – | – | 3,255 | 0.1 |
| | 1972 | 4,561 | 0.4 | 301 | 0.2 | 1,246 | 0.3 | 375 | 0.2 | 6,483 | 0.3 |
| | 1973 | 9,845 | 0.7 | 669 | 0.2 | 1,997 | 0.4 | 550 | 0.3 | 13,061 | 0.5 |
| | 1974 | 2,573 | 0.2 | 493 | 0.2 | 705 | 0.1 | 803 | 0.5 | 4,574 | 0.2 |
| | 1975 | 8,190 | 0.7 | 1,499 | 0.6 | 3.195 | 0.7 | 269 | 0.1 | 13,153 | 0.6 |
| | 1976 | 7,469 | 0.7 | 485 | 0.2 | 1,830 | 0.7 | 123 | 0.1 | 9,907 | 0.6 |
| | 1977 | 8,680 | 0.9 | 1,109 | 0.6 | 2,139 | 0.8 | 728 | 0.6 | 12,656 | 0.8 |
| | 1978 | 9,484 | 0.9 | 1,257 | 0.6 | 2,686 | 0.8 | 607 | 0.6 | 14,034 | 0.8 |
| | 1979 | 10,288 | 1.0 | 1,403 | 0.6 | 2,941 | 1.0 | 657 | 0.7 | 15,289 | 0.9 |
| | 1980 | 11,092 | 1.1 | 1,550 | 0.7 | 3,196 | 1.1 | 707 | 1.0 | 16,545 | 1.0 |
| Haliburton | 1971 | 3,116 | 0.3 | 24 | – | 229 | 0.1 | 38 | – | 3,407 | 0.2 |
| | 1972 | 3,717 | 0.3 | 89 | 0.1 | 208 | 0.1 | 67 | – | 4,081 | 0.2 |
| | 1973 | 4,082 | 0.3 | 63 | – | 6,973 | 1.3 | 107 | – | 11,225 | 0.4 |
| | 1974 | 4,961 | 0.5 | 480 | 0.1 | 206 | – | 39 | – | 5,686 | 0.3 |
| | 1975 | 4,803 | 0.4 | 104 | – | 1,043 | 0.2 | 464 | 0.2 | 6,414 | 0.3 |
| | 1976 | 3,954 | 0.4 | 76 | – | 228 | 0.1 | 2 | – | 4,260 | 0.3 |
| | 1977 | 3,389 | 0.3 | 49 | – | 542 | 0.2 | 35 | – | 4.015 | 0.3 |
| | 1978 | 4,291 | 0.4 | 139 | 0.1 | 640 | 0.2 | 139 | 0.1 | 5,209 | 0.3 |
| | 1979 | 4,363 | 0.4 | 143 | 0.1 | 463 | 0.1 | 146 | 0.1 | 5,115 | 0.3 |
| | 1980 | 4,435 | 0.4 | 146 | 0.1 | 286 | 0.1 | 154 | 0.2 | 5,021 | 0.3 |
| Northumberland | 1971 | 6,124 | 0.6 | 636 | 0.4 | 574 | 0.2 | 1,532 | 0.6 | 8,866 | 0.5 |
| | 1972 | 11,127 | 1.0 | 784 | 0.4 | 636 | 0.2 | 600 | 0.3 | 13,147 | 0.7 |
| | 1973 | 13,618 | 0.9 | 4,779 | 1.6 | 1,663 | 0.3 | 2,142 | 1.1 | 22,202 | 0.9 |
| | 1974 | 17,062 | 1.6 | 1,092 | 0.4 | 2,829 | 0.6 | 4,278 | 2.6 | 25,261 | 1.2 |
| | 1975 | 13,055 | 1.1 | 1,143 | 0.5 | 1,184 | 0.3 | 179 | 0.1 | 15,561 | 0.8 |
| | 1976 | 10,637 | 1.0 | 759 | 0.4 | 2,306 | 0.8 | 812 | 0.6 | 14,514 | 0.9 |
| | 1977 | 9,288 | 1.0 | 1,609 | 0.9 | 1,230 | 0.4 | 562 | 0.4 | 12,689 | 0.8 |
| | 1978 | 12,694 | 1.2 | 1,434 | 0.6 | 2,179 | 0.7 | 808 | 0.7 | 17,115 | 1.0 |
| | 1979 | 12,978 | 1.3 | 1,406 | 0.6 | 2,351 | 0.8 | 649 | 0.7 | 17,384 | 1.1 |
| | 1980 | 13,262 | 1.3 | 1,379 | 0.6 | 2,524 | 0.9 | 490 | 0.7 | 17,655 | 1.1 |

TABLE I/8 (cont'd)

## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO
(In Thousands of 1971 Constant Dollars)

| Regional Municipality & County | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Peterborough | 1971 | 13,684 | 1.4 | 1,515 | 1.0 | 1,605 | 0.4 | 7,742 | 3.0 | 24,546 | 1.4 |
| | 1972 | 17,820 | 1.6 | 660 | 0.3 | 4,794 | 1.3 | 5,509 | 2.5 | 28,783 | 1.5 |
| | 1973 | 16,767 | 1.1 | 1,639 | 0.6 | 6,039 | 1.1 | 2,741 | 1.4 | 27,186 | 1.1 |
| | 1974 | 25,630 | 2.4 | 7,136 | 2.4 | 9,186 | 1.9 | 1,602 | 1.0 | 43,554 | 2.1 |
| | 1975 | 27,640 | 2.4 | 2,309 | 1.0 | 6,784 | 1.5 | 2,830 | 1.4 | 39,563 | 1.9 |
| | 1976 | 22,522 | 2.2 | 1,430 | 0.7 | 2,755 | 1.0 | 2,564 | 1.9 | 29,271 | 1.8 |
| | 1977 | 15,107 | 1.6 | 1,927 | 1.1 | 3,920 | 1.4 | 1,627 | 1.2 | 22,581 | 1.5 |
| | 1978 | 23,388 | 2.2 | 2,866 | 1.3 | 5,528 | 1.7 | 67 | 0.1 | 31,849 | 1.9 |
| | 1979 | 24,265 | 2.4 | 2,989 | 1.3 | 5,657 | 1.8 | -795 | -0.9 | 32,116 | 1.9 |
| | 1980 | 25,141 | 2.5 | 3,112 | 1.4 | 5,786 | 2.0 | -1,658 | -2.3 | 32,381 | 2.0 |
| Simcoe | 1971 | 40,624 | 4.1 | 3,422 | 2.4 | 9.975 | 2.8 | 6,892 | 2.7 | 60,913 | 3.5 |
| | 1972 | 46,814 | 4.2 | 6,324 | 3.2 | 7,563 | 2.0 | 7,821 | 3.6 | 68,522 | 3.6 |
| | 1973 | 78,177 | 5.2 | 10,792 | 3.5 | 12,059 | 2.3 | 4,669 | 2.3 | 105,697 | 4.2 |
| | 1974 | 60,603 | 5.7 | 6,482 | 2.1 | 12,905 | 2.6 | 9,218 | 5.6 | 89,208 | 4.4 |
| | 1975 | 62,051 | 5.3 | 3,618 | 1.6 | 8,137 | 1.7 | 7,729 | 3.9 | 81,535 | 4.0 |
| | 1976 | 48,300 | 4.6 | 2,644 | 1.3 | 7,547 | 2.7 | 3,155 | 2.3 | 61,646 | 3.7 |
| | 1977 | 45,392 | 4.7 | 3,671 | 2.1 | 9,963 | 3.6 | 4,453 | 3.3 | 63,479 | 4.1 |
| | 1978 | 54,730 | 5.2 | 3,309 | 1.5 | 9,166 | 2.8 | 4,336 | 3.9 | 71,541 | 4.2 |
| | 1979 | 54,771 | 5.3 | 2,817 | 1.3 | 9,023 | 2.9 | 3,850 | 4.2 | 70,461 | 4.2 |
| | 1980 | 54,812 | 5.5 | 2,325 | 1.0 | 8,881 | 3.1 | 3,365 | 4.6 | 69,383 | 4.3 |
| Victoria | 1971 | 4,329 | 0.4 | 787 | 0.6 | 1,592 | 0.4 | 1,045 | 0.4 | 7,753 | 0.4 |
| | 1972 | 3,824 | 0.3 | 815 | 0.4 | 571 | 0.2 | 7,492 | 3.4 | 12,702 | 0.7 |
| | 1973 | 7,015 | 0.5 | 415 | 0.1 | 832 | 0.2 | 266 | 0.1 | 8,528 | 0.3 |
| | 1974 | 8,411 | 0.8 | 589 | 0.2 | 567 | 0.1 | 649 | 0.4 | 10,216 | 0.5 |
| | 1975 | 9,556 | 0.8 | 301 | 0.1 | 604 | 0.1 | 2,298 | 1.2 | 12,759 | 0.6 |
| | 1976 | 10,515 | 1.0 | 336 | 0.2 | 2,680 | 1.0 | 367 | 0.3 | 13,898 | 0.8 |
| | 1977 | 6,887 | 0.7 | 548 | 0.3 | 1,393 | 0.5 | 672 | 0.5 | 9,500 | 0.6 |

TABLE I/8 (cont'd)

## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| County | Year | Residential | as % of Central Ontario | Industrial | as % of Central Ontario | Commercial | as % of Central Ontario | Institutional & government | as % of Central Ontario | Total | as % of Central Ontario |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1978 | 10,591 | 1.0 | 286 | 0.1 | 1,662 | 0.5 | -78 | -0.1 | 12,461 | 0.8 |
| | 1979 | 11,433 | 1.1 | 222 | 0.1 | 1,783 | 0.6 | -555 | -0.6 | 12,883 | 0.8 |
| | 1980 | 12,276 | 1.2 | 158 | 0.1 | 1,904 | 0.7 | -1,031 | -1.4 | 13,307 | 0.8 |
| Wellington | 1971 | 36,481 | 3.7 | 1,653 | 1.2 | 5,177 | 1.4 | 14,227 | 5.5 | 57,538 | 3.3 |
| | 1972 | 20,102 | 1.8 | 3,358 | 1.7 | 1,817 | 0.5 | 6,105 | 2.8 | 31,382 | 1.6 |
| | 1973 | 29,403 | 2.0 | 5,441 | 1.8 | 2,813 | 0.5 | 11,301 | 5.6 | 48,958 | 1.9 |
| | 1974 | 35,585 | 3.4 | 6,372 | 2.1 | 5,636 | 1.1 | 8,699 | 5.3 | 56,292 | 2.8 |
| | 1975 | 27,924 | 2.4 | 4,042 | 1.8 | 3,455 | 0.7 | 4,777 | 2.4 | 40,198 | 2.0 |
| | 1976 | 27,233 | 2.6 | 5,662 | 2.9 | 4,881 | 1.8 | 2,225 | 1.6 | 40,001 | 2.4 |
| | 1977 | 16,851 | 1.7 | 4,077 | 2.4 | 8,893 | 3.2 | 1,807 | 1.4 | 31,628 | 2.0 |
| | 1978 | 21,067 | 2.0 | 5,869 | 2.6 | 7,227 | 2.2 | -343 | -0.3 | 33,820 | 2.0 |
| | 1979 | 19,421 | 1.9 | 6,244 | 2.8 | 7,867 | 2.5 | -2,184 | -2.4 | 31,348 | 1.9 |
| | 1980 | 17,774 | 1.8 | 6,618 | 2.9 | 8,507 | 2.9 | -4,025 | -5.5 | 28,874 | 1.8 |
| Total | 1971 | 982,997 | 100.0 | 144,449 | 100.0 | 359,302 | 100.0 | 256,799 | 100.0 | 1,743,547 | 100.0 |
| | 1972 | 1,129,391 | 100.0 | 196,126 | 100.0 | 373,223 | 100.0 | 217,490 | 100.0 | 1,916,230 | 100.0 |
| | 1973 | 1,494,654 | 100.0 | 304,887 | 100.0 | 526,648 | 100.0 | 202,449 | 100.0 | 2,528,638 | |
| | 1974 | 1,057,785 | 100.0 | 303,391 | 100.0 | 494,706 | 100.0 | 164,136 | 100.0 | 2,020,018 | 100.0 |
| | 1975 | 1,173,981 | 100.0 | 229,574 | 100.0 | 465,418 | 100.0 | 197,254 | 100.0 | 2,066,227 | 100.0 |
| | 1976 | 1,039,645 | 100.0 | 198,764 | 100.0 | 275,981 | 100.0 | 137,527 | 100.0 | 1,651,917 | 100.0 |
| | 1977 | 973,926 | 100.0 | 172,746 | 100.0 | 279,719 | 100.0 | 133,974 | 100.0 | 1,560,365 | 100.0 |
| | 1978 | 1,046,429 | 100.0 | 223,542 | 100.0 | 325,791 | 100.0 | 110,862 | 100.0 | 1,706,624 | 100.0 |
| | 1979 | 1,027,594 | 100.0 | 224,072 | 100.0 | 308,131 | 100.0 | 91,805 | 100.0 | 1,651,602 | 100.0 |
| | 1980 | 1,008,759 | 100.0 | 224,603 | 100.0 | 290,472 | 100.0 | 72,748 | 100.0 | 1,596,582 | 100.0 |

TABLE I/9

## NON-RESIDENTIAL BUILDING CONSTRUCTION
## BUILDING PERMITS ISSUED IN CENTRAL ONTARIO
(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Total Non-Residential Construction | as % of Central Ontario |
|---|---|---|---|
| Durham | 1971 | 17,734 | 2.3 |
| | 1972 | 31,691 | 4.0 |
| | 1973 | 31,392 | 3.0 |
| | 1974 | 37,610 | 3.9 |
| | 1975 | 21,079 | 2.4 |
| | 1976 | 23,633 | 3.9 |
| | 1977 | 23,481 | 4.0 |
| projected | 1978 | 25,347 | 3.8 |
| " | 1979 | 25,019 | 4.0 |
| " | 1980 | 24,691 | 4.2 |
| Haldimand/Norfolk | 1971 | 3,159 | 0.4 |
| | 1972 | 4,279 | 0.5 |
| | 1973 | 8,797 | 0.9 |
| | 1974 | 6,749 | 0.7 |
| | 1975 | 42,374 | 4.7 |
| | 1976 | 7,303 | 1.2 |
| | 1977 | 4,828 | 0.8 |
| projected | 1978 | 17,445 | 2.7 |
| " | 1979 | 19,040 | 3.1 |
| " | 1980 | 20,634 | 3.5 |
| " | 1980 | 20,634 | 3.5 |
| Halton | 1971 | 19,457 | 2.6 |
| | 1972 | 23,384 | 3.0 |
| | 1973 | 44,638 | 4.3 |
| | 1974 | 36,731 | 3.8 |
| | 1975 | 29,800 | 3.3 |
| | 1976 | 30,076 | 4.9 |
| | 1977 | 31,451 | 5.4 |
| projected | 1978 | 35,723 | 5.4 |
| " | 1979 | 36,957 | 5.9 |
| " | 1980 | 38,189 | 6.5 |
| Muskoka | 1971 | 2,899 | 0.4 |
| | 1972 | 3,088 | 0.4 |
| | 1973 | 3,492 | 0.3 |
| | 1974 | 6,259 | 0.6 |
| | 1975 | 4,867 | 0.5 |
| | 1976 | 7,219 | 1.2 |
| | 1977 | 3,477 | 0.6 |

TABLE I/9 (cont'd)

## NON-RESIDENTIAL BUILDING CONSTRUCTION BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Total Non-Residential Construction | as % of Central Ontario |
|---|---|---|---|
| projected | 1978 | 6,096 | 0.9 |
| " | 1979 | 6,502 | 1.0 |
| " | 1980 | 6,908 | 1.2 |
| Niagara | 1971 | 35,272 | 4.6 |
| | 1972 | 43,135 | 5.5 |
| | 1973 | 54,585 | 5.3 |
| | 1974 | 29,051 | 3.0 |
| | 1975 | 39,108 | 4.4 |
| | 1976 | 32,411 | 5.3 |
| | 1977 | 25,450 | 4.3 |
| projected | 1978 | 27,518 | 4.2 |
| " | 1979 | 25,147 | 4.0 |
| " | 1980 | 22,775 | 3.9 |
| Peel | 1971 | 77,617 | 10.2 |
| | 1972 | 83,217 | 10.6 |
| | 1973 | 122,132 | 11.8 |
| | 1974 | 95,053 | 9.9 |
| | 1975 | 64,154 | 7.2 |
| | 1976 | 90,117 | 14.7 |
| | 1977 | 73,794 | 12.6 |
| projected | 1978 | 78,633 | 11.9 |
| " | 1979 | 76,646 | 12.3 |
| " | 1980 | 74,659 | 12.7 |
| Waterloo | 1971 | 27,651 | 3.6 |
| | 1972 | 43,102 | 5.5 |
| | 1973 | 37,852 | 3.7 |
| | 1974 | 34,528 | 3.6 |
| | 1975 | 28,185 | 3.2 |
| | 1976 | 38,484 | 6.3 |
| | 1977 | 30,011 | 5.1 |
| projected | 1978 | 32,570 | 4.9 |
| " | 1979 | 32,147 | 5.2 |
| " | 1980 | 31,725 | 5.4 |
| Hamilton-Wentworth | 1971 | 32,422 | 4.3 |
| | 1972 | 42,887 | 5.5 |
| | 1073 | 36,208 | 3.5 |
| | 1974 | 56,950 | 5.9 |

TABLE I/9 (cont'd)

NON-RESIDENTIAL BUILDING CONSTRUCTION
BUILDING PERMITS ISSUED IN CENTRAL ONTARIO
(In Thousands of 1971 Constant Dollars)

| Regional Municipality | Year | Total Non-Residential Construction | as % of Central Ontario |
|---|---|---|---|
| | 1975 | 59,762 | 6.7 |
| | 1976 | 34,496 | 5.6 |
| | 1977 | 40,888 | 7.0 |
| projected | 1978 | 47,969 | 7.3 |
| " | 1979 | 49,117 | 7.9 |
| " | 1980 | 50,267 | 8.6 |
| York | 1971 | 480,232 | 63.1 |
| | 1972 | 447,323 | 56.9 |
| | 1073 | 600,356 | 58.1 |
| | 1974 | 562,140 | 58.4 |
| | 1975 | 540,409 | 60.6 |
| | 1976 | 295,778 | 48.3 |
| | 1977 | 293,777 | 50.1 |
| projected | 1978 | 328,230 | 49.7 |
| " | 1979 | 295,288 | 47.3 |
| " | 1980 | 262,345 | 44.6 |
| Brant | 1971 | 4,752 | 0.6 |
| | 1972 | 7,598 | 1.0 |
| | 1973 | 16,582 | 1.6 |
| | 1974 | 17,196 | 1.8 |
| | 1975 | 6,544 | 0.7 |
| | 1976 | 9,888 | 1.6 |
| | 1977 | 8,328 | 1.4 |
| projected | 1978 | 10,880 | 1.7 |
| " | 1979 | 11,068 | 1.8 |
| " | 1980 | 11,256 | 1.9 |

TABLE I/9 (cont'd)

## NON-RESIDENTIAL BUILDING CONSTRUCTION BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| | Year | Total Non-Residential Construction | as % of Central Ontario |
|---|---|---|---|
| Dufferin | 1971 | 690 | 0.1 |
| | 1972 | 1,922 | 0.2 |
| | 1973 | 3,216 | 0.3 |
| | 1974 | 2,001 | 0.2 |
| | 1975 | 4,963 | 0.6 |
| | 1976 | 2,438 | 0.4 |
| | 1977 | 3,976 | 0.7 |
| projected | 1978 | 4,550 | 0.7 |
| " | 1979 | 5,001 | 0.8 |
| " | 1980 | 5,453 | 0.9 |
| Haliburton | 1971 | 291 | – |
| | 1972 | 364 | – |
| | 1973 | 7,143 | 0.7 |
| | 1974 | 725 | 0.1 |
| | 1975 | 1,611 | 0.2 |
| | 1976 | 306 | – |
| | 1977 | 626 | 0.1 |
| projected | 1978 | 918 | 0.1 |
| " | 1979 | 752 | 0.1 |
| " | 1980 | 586 | 0.1 |
| Northumberland | 1971 | 2,742 | 0.4 |
| | 1972 | 2,020 | 0.2 |
| | 1973 | 8,584 | 0.8 |
| | 1974 | 8,199 | 0.8 |
| | 1975 | 2,506 | 0.3 |
| | 1976 | 3,877 | 0.6 |
| | 1977 | 3,401 | 0.6 |
| projected | 1978 | 4,421 | 0.7 |
| " | 1979 | 4,406 | 0.7 |
| " | 1980 | 4,393 | 0.7 |
| Peterborough | 1971 | 10,862 | 1.4 |
| | 1972 | 10,963 | 1.4 |
| | 1973 | 10,419 | 1.0 |
| | 1974 | 17,924 | 1.9 |
| | 1975 | 11,923 | 1.3 |
| | 1976 | 6,749 | 1.1 |
| | 1977 | 7,474 | 1.3 |
| projected | 1978 | 8,461 | 1.3 |
| " | 1979 | 7,851 | 1.3 |
| " | 1980 | 7,240 | 1.2 |
| Simcoe | 1971 | 20,289 | 2.7 |
| | 1972 | 21,708 | 2.8 |
| | 1973 | 27,520 | 2.7 |
| | 1974 | 28,605 | 3.0 |

TABLE I/9 (cont'd)

## NON-RESIDENTIAL BUILDING CONSTRUCTION BUILDING PERMITS ISSUED IN CENTRAL ONTARIO

(In Thousands of 1971 Constant Dollars)

| | Year | Total Non-Residential Construction | as % of Central Ontario |
|---|---|---|---|
| | 1975 | 19,484 | 2.2 |
| | 1976 | 13,346 | 2.2 |
| | 1977 | 18,087 | 3.1 |
| projected | 1978 | 16,811 | 2.5 |
| " | 1979 | 16,811 | 2.5 |
| " | 1979 | 15,690 | 2.5 |
| " | 1980 | 14,571 | 2.5 |
| Victoria | 1971 | 3,424 | 0.5 |
| | 1972 | 8,878 | 1.1 |
| | 1973 | 1,513 | 0.1 |
| | 1974 | 1,805 | 0.2 |
| | 1975 | 3,203 | 0.3 |
| | 1976 | 3,383 | 0.6 |
| | 1977 | 2,613 | 0.4 |
| projected | 1978 | 1,870 | 0.3 |
| " | 1979 | 1,450 | 0.2 |
| " | 1980 | 1,031 | 0.2 |
| Wellington | 1971 | 21,057 | 2.8 |
| | 1972 | 11,280 | 1.4 |
| | 1973 | 19,555 | 1.9 |
| | 1974 | 20,707 | 2.2 |
| | 1975 | 12,274 | 1.4 |
| | 1976 | 12,768 | 2.1 |
| | 1977 | 14,777 | 2.5 |
| projected | 1978 | 12,753 | 1.9 |
| " | 1979 | 11,927 | 1.9 |
| " | 1980 | 11,100 | 1.9 |
| Total | 1971 | 760,550 | 100.0 |
| | 1972 | 786,839 | 100.0 |
| | 1973 | 1,033,984 | 100.0 |
| | 1974 | 962,233 | 100.0 |
| | 1975 | 892,246 | 100.0 |
| | 1976 | 612,272 | 100.0 |
| | 1977 | 586,439 | 100.0 |
| projected | 1978 | 660,195 | 100.0 |
| " | 1979 | 624,008 | 100.0 |
| " | 1980 | 587,823 | 100.0 |

TABLE I/10

SHIPMENTS OF AGGREGATES IN CENTRAL ONTARIO ECONOMIC REGION, 1976-1977-1978p

| Regional Municipality/County | 1976 Designated Areas | 1977 Designated Areas | 1976 Non-Designated Areas | 1977 Non-Designated Areas | 1976 Total | 1977 Total | 1978p |
|---|---|---|---|---|---|---|---|
| | | | (Tonnes) | | | | |
| Brant | 2,589,403 | 1,790,217 | 133,365 | 186,193 | 2,722,768 | 1,976,410 | 1,776,206 |
| Dufferin | 939,304 | 1,252,136 | 26,943 | 25,719 | 966,247 | 1,277,355 | 845,133 |
| Durham | 7,012,343 | 7,183,374 | 337,934 | 229,978 | 7,350,277 | 7,413,352 | 8,077,643 |
| Haldimand-Norfolk | 3,628,680 | 3,176,488 | 89,670 | 71,486 | 3,718,350 | 3,247,974 | 2,564,399 |
| Halton | 9,064,416 | 8,594,867 | | | 9,064,416 | 8,594,867 | 9,727,696 |
| Hamilton-Wentworth | 3,495,641 | 3,007,250 | | | 3,495,641 | 3,007,250 | 3,157,155 |
| Haliburton | | | 336,478 | 302,155 | 336,478 | 302,155 | 302,155 |
| Muskoka | | | 560,330 | 467,753 | 560,330 | 467,753 | 470,000e |
| Niagara | 5,937,252 | 5,200,582 | | | 5,937,252 | 5,200,582 | 5,430,209 |
| Northumberland | 3,990,657 | 3,771,175 | 120,514 | 242,370 | 4,111,171 | 4,013,545 | 4,510,496 |
| Peel | 6,449,139 | 6,602,256 | 8,160 | 6,581 | 6,457,299 | 6,608,837 | 7,009,136 |
| Peterborough | 1,975,047 | 2,230,865 | 76,098 | 87,905 | 2,051,145 | 2,318,770 | 1,863,131 |
| Simcoe | 5,275,892 | 5,810,169 | 379,093 | 360,415 | 5,654,985 | 6,170,584 | 6,569,868 |
| Victoria | 2,708,176 | 2,913,959 | 158,982 | 294,938 | 2,867,158 | 3,208,897 | 3,519,758 |
| Waterloo | 4,371,311 | 4,529,787 | 101,161 | 125,539 | 4,472,472 | 4,655,326 | 4,105,765 |
| Wellington | 3,095,806 | 3,201,965 | | 43,439 | 3,095,806 | 3,245,404 | 2,947,357 |
| York | 5,373,890 | 5,648,767 | 71,083 | 66,353 | 5,444,972 | 5,715,120 | 5,910,077 |
| TOTAL | 65,906,957 | 64,913,857 | 2,399,811 | 2,510,324 | 68,306,768 | 67,424,181 | 68,786,184 |

p = preliminary
e = estimated

TABLE I/11

## POPULATION OF CENTRAL ONTARIO, 1971-1981

| Regional Municipalities | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Durham | 221,513 | 226,241 | 231,076 | 235,795 | 240,515 | 247,473 | 254,478 | 261,482 | 268,487 | 275,491 | 282,496 |
| Haldimand-Norfolk | 86,794 | 87,665 | 85,136 | 89,564 | 90,484 | 89,252 | 90,067 | 90,881 | 91,696 | 92,510 | 93,325 |
| Halton | 190,469 | 196,774 | 203,068 | 209,339 | 236,099 | 228,497 | 235,003 | 241,509 | 248,014 | 254,520 | 261,026 |
| Muskoka | 31,937 | 32,239 | 32,546 | 32,833 | 33,149 | 36,691 | 37,305 | 37,918 | 38,532 | 39,145 | 39,759 |
| Niagara | 347,333 | 351,296 | 355,297 | 359,418 | 363,319 | 365,438 | 368,493 | 371,548 | 374,602 | 377,657 | 380,712 |
| Peel | 259,385 | 272,981 | 286,073 | 300,466 | 314,039 | 375,910 | 392,587 | 409,264 | 425,942 | 442,619 | 459,296 |
| Waterloo | 254,010 | 261,100 | 268,323 | 275,449 | 282,652 | 289,129 | 296,477 | 303,826 | 311,174 | 318,523 | 325,871 |
| Hamilton-Wentworth | 401,921 | 405,188 | 408,551 | 411,840 | 415,119 | 409,490 | 412,349 | 415,208 | 418,066 | 420,925 | 423,784 |
| York | 138,831 | 151,848 | 164,865 | 177,881 | 190,898 | 203,915 | 216,932 | 229,949 | 242,965 | 255,982 | 268,999 |
| Toronto | 2,113,646 | 2,139,843 | 2,166,268 | 2,194,322 | 2,221,180 | 2,124,291 | 2,117,068 | 2,109,844 | 2,102,621 | 2,095,397 | 2,088,174 |
| TOTAL | 4,045,839 | 4,125,175 | 4,201,203 | 4,286,907 | 4,387,454 | 4,370,086 | 4,420,759 | 4,471,429 | 4,522,099 | 4,572,769 | 4,623,442 |
| Counties | | | | | | | | | | | |
| Brant | 96,757 | 98,080 | 99,351 | 100,629 | 101,969 | 99,099 | 100,439 | 101,799 | 103,120 | 104,460 | 105,800 |
| Dufferin | 21,194 | 21,622 | 22,039 | 22,448 | 22,873 | 28,528 | 30,054 | 31,580 | 33,105 | 34,631 | 36,157 |
| Haliburton | 9,080 | 9,197 | 9,313 | 9,428 | 9,547 | 10,795 | 11,014 | 11,233 | 11,453 | 11,672 | 11,891 |
| Northumberland | 59,227 | 59,687 | 60,219 | 60,665 | 61,144 | 64,441 | 65,177 | 65,914 | 66,650 | 67,387 | 68,123 |
| Peterborough | 91,587 | 93,342 | 94,247 | 95,207 | 96,116 | 99,930 | 100,791 | 101,651 | 102,512 | 103,372 | 104,233 |
| Simcoe | 175,640 | 178,371 | 181,226 | 184,028 | 186,806 | 210,691 | 215,715 | 220,739 | 225,762 | 230,786 | 235,810 |
| Victo[illegible]n | 36,629 | 36,823 | 37,013 | 37,193 | 37,377 | 43,543 | 43,978 | 44,414 | 44,849 | 45,285 | 45,720 |
| Well[illegible]gton | 108,589 | 111,026 | 113,490 | 115,942 | 118,411 | 123,736 | 127,630 | 131,524 | 135,418 | 139,312 | 143,206 |
| TOTAL | 598,703 | 608,148 | 616,898 | 625,540 | 634,243 | 680,763 | 694,798 | 708,834 | 722,869 | 736,905 | 750,940 |
| CENTRAL ONTARIO TOTAL | 4,644,542 | 4,733,323 | 4,818,101 | 4,912,447 | 5,021,697 | 5,050,849 | 5,115,557 | 5,180,263 | 5,244,968 | 5,309,674 | 5,374,382 |

# APPENDIX II

# SOUTHWESTERN ONTARIO ECONOMIC REGION

TABLE II/1 SOUTHWESTERN ONTARIO ECONOMIC REGION — RETAIL SALES

(1971 Constant Dollars in Thousands)

| Counties | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bruce | 60,600 | 64,299 | 65,347 | 61,978 | 62,526 | 70,885 | 77,694 | 75,535 | 77,939 | 80,343 | 82,747 |
| Elgin | 91,600 | 96,854 | 98,153 | 92,658 | 93,174 | 105,673 | 92,603 | 96,701 | 96,753 | 96,805 | 96,857 |
| Essex | 455,600 | 482,793 | 490,150 | 463,988 | 467,577 | 530,176 | 481,305 | 497,620 | 500,941 | 504,262 | 507,582 |
| Grey | 88,700 | 93,518 | 94,547 | 89,026 | 89,283 | 101,247 | 111,124 | 107,296 | 110,393 | 113,490 | 116,586 |
| Huron | 65,500 | 67,874 | 67,634 | 62,674 | 61,843 | 70,137 | 82,644 | 76,854 | 79,155 | 81,455 | 83,756 |
| Kent | 160,800 | 169,066 | 170,537 | 160,355 | 160,410 | 181,920 | 168,666 | 171,713 | 172,633 | 173,553 | 174,473 |
| Lambton | 158,700 | 167,112 | 168,777 | 158,887 | 159,249 | 180,549 | 176,073 | 176,483 | 178,781 | 181,079 | 183,377 |
| Middlesex | 452,600 | 482,698 | 492,612 | 469,165 | 475,427 | 539,090 | 508,096 | 521,783 | 529,574 | 537,365 | 545,156 |
| Oxford | 117,300 | 123,499 | 124,714 | 117,465 | 117,679 | 133,416 | 127,315 | 128,555 | 129,852 | 131,149 | 132,446 |
| Perth | 93,500 | 100,334 | 101,143 | 94,977 | 94,949 | 107,668 | 99,709 | 101,439 | 101,908 | 102,377 | 102,847 |
| TOTAL | 1,746,900 | 1,848,047 | 1,873,614 | 1,771,173 | 1,782,117 | 2,020,760 | 1,925,219 | 1,953,979 | 1,977,929 | 2,001,878 | 2,025,827 |

Source: The Financial Post — Survey of Markets 1971-1977/78

TABLE II/2

RETAIL SALES PER CAPITA IN SOUTHWESTERN ONTARIO ECONOMIC REGION, 1971-1981

(In 1971 Constant Dollars)

| Counties | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bruce | 1,323 | 1,342 | 1,342 | 1,250 | 1,241 | 1,233 | 1,306 | 1,279 | 1,302 | 1,325 | 1,291 |
| Elgin | 1,371 | 1,441 | 1,443 | 1,345 | 1,337 | 1,529 | 1,331 | 1,382 | 1,374 | 1,366 | 1,357 |
| Essex | 1,428 | 1,559 | 1,560 | 1,452 | 1,444 | 1,708 | 1,547 | 1,576 | 1,574 | 1,571 | 1,597 |
| Grey | 1,310 | 1,398 | 1,403 | 1,305 | 1,298 | 1,403 | 1,516 | 1,447 | 1,470 | 1,492 | 1,511 |
| Huron | 1,112 | 1,293 | 1,301 | 1,210 | 1,203 | 1,252 | 1,460 | 1,364 | 1,400 | 1,437 | 1,482 |
| Kent | 1,548 | 1,666 | 1,669 | 1,555 | 1,545 | 1,714 | 1,575 | 1,596 | 1,593 | 1,591 | 1,589 |
| Lambton | 1,300 | 1,453 | 1,457 | 1,357 | 1,348 | 1,497 | 1,446 | 1,428 | 1,429 | 1,430 | 1,453 |
| Middlesex | 1,569 | 1,685 | 1,686 | 1,566 | 1,557 | 1,775 | 1,650 | 1,696 | 1,710 | 1,724 | 1,720 |
| Oxford | 1,429 | 1,530 | 1,532 | 1,427 | 1,418 | 1,563 | 1,479 | 1,470 | 1,466 | 1,463 | 1,468 |
| Perth | 1,485 | 1,588 | 1,593 | 1,482 | 1,472 | 1,624 | 1,490 | 1,529 | 1,536 | 1,542 | 1,527 |
| TOTAL | 1,433 | 1,552 | 1,554 | 1,447 | 1,439 | 1,620 | 1,528 | 1,541 | 1,547 | 1,553 | 1,561 |
| **Ontario Total** | 1,542 | 1,514 | 1,618 | 1,506 | 1,497 | 1,620 | 1,575 | 1,580 | 1,587 | 1,594 | 1,601 |
| Market Rating Index (%) | 92.9 | 102.5 | 96.0 | 96.1 | 96.1 | 100.0 | 97.0 | 97.5 | 97.5 | 97.5 | 97.5 |

TABLE II/3

SOUTHWESTERN ONTARIO ECONOMIC REGION — DISPOSABLE INCOME, 1971-1981

(1971 Constant Dollars in Thousands)

| Counties | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bruce | 78,400 | 88,942 | 95,163 | 108,346 | 98,635 | 157,544 | 153,116 | 166,788 | 181,025 | 195,262 | 209,499 |
| Elgin | 149,100 | 161,439 | 166,755 | 168,393 | 175,222 | 220,948 | 216,133 | 229,103 | 241,756 | 254,410 | 267,064 |
| Essex | 913,300 | 969,924 | 986,456 | 1,033,926 | 1,067,099 | 1,230,611 | 1,262,493 | 1,314,600 | 1,378,271 | 1,441,942 | 1,505,613 |
| Grey | 128,800 | 141,849 | 148,461 | 161,515 | 153,584 | 180,486 | 180,198 | 189,004 | 197,001 | 204,998 | 212,995 |
| Huron | 107,700 | 117,922 | 122,867 | 137,867 | 120,273 | 155,112 | 142,691 | 153,087 | 158,889 | 164,686 | 170,486 |
| Kent | 232,000 | 250,286 | 257,784 | 277,898 | 283,754 | 357,232 | 345,778 | 373,621 | 395,954 | 418,288 | 440,621 |
| Lambton | 371,500 | 394,995 | 402,111 | 417,929 | 421,775 | 465,835 | 471,986 | 487,102 | 503,673 | 520,244 | 536,814 |
| Middlesex | 837,300 | 897,712 | 920,053 | 959,196 | 989,556 | 1,092,955 | 1,134,246 | 1,172,324 | 1,221,844 | 1,271,365 | 1,320,885 |
| Oxford | 176,400 | 191,611 | 198,417 | 206,955 | 206,280 | 258,915 | 256,144 | 270,069 | 284,454 | 298,839 | 313,225 |
| Perth | 136,500 | 150,858 | 158,311 | 174,343 | 160,819 | 191,459 | 184,450 | 195,428 | 202,682 | 209,935 | 217,189 |
| TOTAL | 3,131,000 | 3,365,538 | 3,456,378 | 3,646,368 | 3,676,997 | 4,311,097 | 4,347,235 | 4,550,607 | 4,765,549 | 4,979,969 | 5,194,391 |

Source: The Financial Post — Survey of Markets 1972-1977/78

TABLE II/4

DISPOSABLE INCOME PER CAPITA IN SOUTHWESTERN ONTARIO ECONOMIC REGION, 1971-1981

(In 1971 Constant Dollars)

| Counties | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bruce | 1,712 | 1,857 | 1,954 | 2,184 | 1,957 | 2,741 | 2,573 | 2,824 | 3,025 | 3,220 | 3,269 |
| Elgin | 2,232 | 2,402 | 2,452 | 2,444 | 2,514 | 3,198 | 3,105 | 3,274 | 3,434 | 3,591 | 3,741 |
| Essex | 2,863 | 3,133 | 3,140 | 3,236 | 3,296 | 3,956 | 4,058 | 4,165 | 4,330 | 4,493 | 4,737 |
| Grey | 1,903 | 2,120 | 2,203 | 2,368 | 2,232 | 2,501 | 2,458 | 2,550 | 2,623 | 2,694 | 2,761 |
| Huron | 1,829 | 2,246 | 2,363 | 2,662 | 2,340 | 2,770 | 2,521 | 2,717 | 2,811 | 2,905 | 3,017 |
| Kent | 2,233 | 2,466 | 2,522 | 2,695 | 2,734 | 3,366 | 3,229 | 3,472 | 3,655 | 3,835 | 4,013 |
| Lambton | 3,043 | 3,435 | 3,472 | 3,569 | 3,571 | 3,863 | 3,875 | 3,940 | 4,025 | 4,107 | 4,254 |
| Middlesex | 2,903 | 3,134 | 3,142 | 3,203 | 3,241 | 3,598 | 3,684 | 3,810 | 3,945 | 4,079 | 4,166 |
| Oxford | 2,149 | 2,374 | 2,438 | 2,515 | 2,485 | 3,034 | 2,975 | 3,087 | 3,212 | 3,334 | 3,471 |
| Perth | 2,123 | 2,387 | 2,493 | 2,720 | 2,493 | 2,889 | 2,757 | 2,946 | 3,054 | 3,162 | 3,224 |
| TOTAL | 2,569 | 2,826 | 2,866 | 2,979 | 2,968 | 3,457 | 3,450 | 3,589 | 3,738 | 3,864 | 4,003 |
| **Ontario Total** | 3,135 | 3,289 | 3,314 | 3,369 | 3,419 | 3,668 | 3,757 | 3,811 | 3,909 | 4,006 | 4,104 |
| Income Rating Index (%) | 81.9 | 85.9 | 86.5 | 88.4 | 86.8 | 94.2 | 91.8 | 94.2 | 95.6 | 96.5 | 97.5 |

TABLE II/5

## BUILDING PERMITS FOR SOUTHWESTERN ONTARIO ECONOMIC REGION, 1981

(1971 Constant Dollars in Thousands)

| Counties | Residential Construction | % of Region | Non-Residential Construction | % of Region | Total Construction | % of Region |
|---|---|---|---|---|---|---|
| Bruce | 7,283 | 3.7 | 2,766 | 2.2 | 10,049 | 3.1 |
| Elgin | 9,582 | 4.8 | 4,323 | 3.4 | 13,905 | 4.3 |
| Essex | 64,824 | 32.6 | 48,019 | 38.1 | 112,843 | 34.8 |
| Grey | 8,247 | 4.2 | 5,139 | 4.1 | 13,386 | 4.1 |
| Huron | 2,476 | 1.2 | 1,883 | 1.5 | 4,359 | 1.3 |
| Kent | 15,196 | 7.7 | 10,821 | 8.6 | 26,017 | 8.0 |
| Lambton | 21,098 | 10.6 | 13,260 | 10.5 | 34,358 | 10.6 |
| Middlesex | 51.699 | 26.0 | 22,356 | 17.7 | 74,055 | 22.8 |
| Oxford | 10,680 | 5.4 | 11,800 | 9.4 | 22,480 | 6.9 |
| Perth | 7,550 | 3.8 | 5,670 | 4.5 | 13,220 | 4.1 |
| TOTAL | 198,635 | 100.0 | 126,037 | 100.0 | 324,672 | 100.0 |

TABLE II/5

## BUILDING PERMITS FOR SOUTHWESTERN ONTARIO ECONOMIC REGION, 1980

(1971 Constant Dollars in Thousands)

| Counties | Residential Construction | % of Region | Non-Residential Construction | % of Region | Total Construction | % of Region |
|---|---|---|---|---|---|---|
| Bruce | 8,370 | 4.2 | 2,956 | 2.4 | 11.326 | 3.5 |
| Elgin | 9,289 | 4.7 | 4,340 | 3.5 | 13,629 | 4.3 |
| Essex | 61,852 | 31.1 | 42.465 | 34.6 | 104,317 | 32.5 |
| Grey | 9,175 | 4.6 | 5,111 | 4.2 | 14,286 | 4.5 |
| Huron | 2,711 | 1.4 | 2,156 | 1.8 | 4,867 | 1.5 |
| Kent | 15,167 | 7.6 | 10,919 | 8.9 | 26,086 | 8.1 |
| Lambton | 22,208 | 11.2 | 13,509 | 11.0 | 35,717 | 11.1 |
| Middlesex | 50,948 | 25.4 | 23,999 | 19.6 | 74,497 | 23.2 |
| Oxford | 11,441 | 5.8 | 11,487 | 9.4 | 22,928 | 7.1 |
| Perth | 7,916 | 4.0 | 5,674 | 4.6 | 13,590 | 4.2 |
| TOTAL | 198,627 | 100.0 | 122,616 | 100.0 | 321,243 | 100.0 |

TABLE II/5
Southwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .49 Year 1979

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 6,462 | 3,166 | 1.8 | 4,330 | 2,122 | 1.6 | 10,792 | 5,288 | 1.7 |
| Elgin | 14,264 | 6,989 | 4.0 | 9,080 | 4,449 | 3.2 | 23,344 | 11,438 | 3.6 |
| Essex | 160,366 | 78,579 | 44.6 | 126,760 | 62,112 | 45.1 | 287,126 | 140,691 | 44.8 |
| Grey | 15,393 | 7,543 | 4.3 | 12,148 | 5,953 | 4.3 | 27,541 | 13,496 | 4.3 |
| Huron | 3,263 | 1,599 | 0.9 | 2,691 | 1,319 | 1.0 | 5,954 | 2,917 | 0.9 |
| Kent | 24,144 | 11,830 | 6.7 | 23,359 | 11,446 | 8.3 | 47,503 | 23,276 | 7.4 |
| Lambton | 20,237 | 9,916 | 5.6 | 20,000 | 9,800 | 7.1 | 40,237 | 19,716 | 6.3 |
| Middlesex | 84,108 | 41,213 | 23.4 | 37,524 | 18,387 | 13.3 | 121,632 | 59,600 | 19.0 |
| Oxford | 18,886 | 9,254 | 5.2 | 33,906 | 16,614 | 12.1 | 52,792 | 25,868 | 8.2 |
| Perth | 12,750 | 6,247 | 3.5 | 11,346 | 5,560 | 4.0 | 24,096 | 11,807 | 3.8 |
| REGION TOTAL | 359,873 | 176,336 | 100.0 | 281,144 | 137,762 | 100.0 | 641,017 | 314,098 | 100.0 |

TABLE II/5
Southwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .54 Year 1978

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 14,339 | 7,743 | 3.7 | 4,819 | 2,602 | 2.1 | 19,158 | 10,345 | 3.1 |
| Elgin | 23,564 | 12,724 | 6.0 | 8,960 | 4,839 | 3.9 | 32,524 | 17,563 | 5.3 |
| Essex | 123,110 | 66,479 | 31.4 | 89,389 | 48,270 | 39.3 | 212,499 | 114,749 | 34.3 |
| Grey | 16,108 | 8,698 | 4.1 | 7,655 | 4,134 | 3.4 | 23,763 | 12,832 | 3.8 |
| Huron | 4,900 | 2,646 | 1.2 | 4,454 | 2,405 | 1.9 | 9,354 | 5,051 | 1.5 |
| Kent | 28,484 | 15,381 | 7.3 | 19,429 | 10,492 | 8.5 | 47,913 | 25,873 | 7.7 |
| Lambton | 38,845 | 20,976 | 9.9 | 28,407 | 15,340 | 12.5 | 67,252 | 36,316 | 10.8 |
| Middlesex | 109,296 | 59,020 | 27.9 | 37,999 | 20,519 | 16.7 | 147,295 | 79,539 | 23.8 |
| Oxford | 21,260 | 11,480 | 5.4 | 14,743 | 7,961 | 6.5 | 36,003 | 19,441 | 5.8 |
| Perth | 12,290 | 6,636 | 3.1 | 11,825 | 6,386 | 5.2 | 24,115 | 13,022 | 3.9 |
| REGION TOTAL | 392,296 | 211,783 | 100.0 | 227,680 | 122,948 | 100.0 | 619,876 | 334,731 | 100.0 |

Table II/5
Southwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .58 Year 1977

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 16,984 | 9,851 | 0.5 | 5,834 | 3,384 | 0.3 | 22,818 | 13,235 | 4.0 |
| Elgin | 16,081 | 9,326 | 0.4 | 6,318 | 3,664 | 0.3 | 22,399 | 12,990 | 4.0 |
| Essex | 90,318 | 52,384 | 2.5 | 67,632 | 39,227 | 3.3 | 157,950 | 91,611 | 27.9 |
| Grey | 13,053 | 7,571 | 0.4 | 9,239 | 5,359 | 0.4 | 22,292 | 12,930 | 3.9 |
| Huron | 5,080 | 2,946 | 0.1 | 2,845 | 1,650 | 0.1 | 7,925 | 4,596 | 1.4 |
| Kent | 31,737 | 18,407 | 0.9 | 17,979 | 10,428 | 0.9 | 49,716 | 28,835 | 8.8 |
| Lambton | 53,954 | 31,293 | 1.5 | 24,810 | 14,389 | 1.2 | 78,764 | 45,682 | 13.9 |
| Middlesex | 96,663 | 56,065 | 2.7 | 45,724 | 26,519 | 2.2 | 142,387 | 82,584 | 25.1 |
| Oxford | 18,177 | 10,543 | 0.5 | 19,206 | 11,139 | 0.9 | 37,383 | 21,682 | 6.6 |
| Perth | 16,210 | 9,402 | 0.5 | 8,721 | 5,058 | 0.4 | 24,931 | 14,460 | 4.4 |
| REGION TOTAL | 358,257 | 207,788 | 100.0 | 208,308 | 120,817 | 100.0 | 566,565 | 328,605 | 100.0 |

TABLE II/5

Southwestern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .58 Year 1977

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 20,517 | 12,721 | 6.4 | 5,994 | 3,716 | 3.4 | 26,511 | 16,437 | 5.4 |
| Elgin | 13,089 | 8,115 | 4.1 | 7,108 | 4,407 | 4.1 | 20,197 | 12,522 | 4.1 |
| Essex | 80,590 | 49,966 | 25.2 | 32,664 | 20,251 | 18.6 | 113,254 | 70,217 | 22.8 |
| Grey | 20,785 | 12,887 | 6.5 | 8,063 | 4,999 | 4.5 | 28,848 | 17,886 | 5.8 |
| Huron | 5,890 | 3,652 | 1.8 | 5,241 | 3,249 | 3.0 | 11,131 | 6,901 | 2.2 |
| Kent | 24,272 | 15,049 | 7.6 | 18,243 | 11,310 | 10.4 | 42,515 | 26,359 | 8.6 |
| Lambton | 42,979 | 26,647 | 13.4 | 23,399 | 14,507 | 13.3 | 66,378 | 41,154 | 13.4 |
| Middlesex | 73,700 | 45,694 | 23.0 | 49,308 | 30,571 | 28.1 | 123,008 | 76,265 | 24.8 |
| Oxford | 23,366 | 14,487 | 7.3 | 16,503 | 10,232 | 9.4 | 39,869 | 24,719 | 8.0 |
| Perth | 15,124 | 9,377 | 4.7 | 9,177 | 5,690 | 5.2 | 24,301 | 15,067 | 4.9 |
| REGION TOTAL | 320,312 | 198,595 | 100.0 | 175,700 | 108,932 | 100.0 | 496,012 | 307,527 | 100.0 |

TABLE II/5
Southwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .62 Year 1976

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 16,650 | 11,322 | 5.3 | 9,226 | 6,274 | 5.6 | 25,876 | 17,596 | 5.4 |
| Elgin | 12,579 | 8,554 | 4.0 | 8,093 | 5,503 | 4.9 | 20,672 | 14,057 | 4.3 |
| Essex | 63,796 | 43,381 | 20.3 | 36,358 | 24,723 | 22.0 | 100,154 | 68,104 | 20.9 |
| Grey | 20,385 | 13,862 | 6.5 | 6,020 | 4,094 | 3.6 | 26,405 | 17,956 | 5.5 |
| Huron | 5,294 | 3,600 | 1.7 | 4,258 | 2,895 | 2.6 | 9,552 | 6,495 | 2.0 |
| Kent | 21,864 | 14,868 | 7.0 | 15,317 | 10,415 | 9.3 | 37,181 | 25,283 | 7.8 |
| Lambton | 47,984 | 32,630 | 15.3 | 20,714 | 14,085 | 12.5 | 68,698 | 46,715 | 14.3 |
| Middlesex | 91,738 | 62,382 | 29.2 | 34,210 | 23,263 | 20.7 | 125,948 | 85,645 | 26.3 |
| Oxford | 22,102 | 15,029 | 7.0 | 23,060 | 15,681 | 13.9 | 45,162 | 30,710 | 9.4 |
| Perth | 11,601 | 7,889 | 3.7 | 8,056 | 5,478 | 4.9 | 19,657 | 13,367 | 4.1 |
| REGION TOTAL | 313,993 | 213,517 | 100.0 | 165,312 | 112,411 | 100.0 | 479,305 | 325,928 | 100.0 |

TABLE II/5
Southwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .75 Year 1974

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 15,270 | 11,453 | 6.0 | 1,875 | 1,406 | 1.0 | 17,145 | 12,859 | 3.8 |
| Elgin | 8,296 | 6,222 | 3.2 | 7,361 | 5,521 | 3.7 | 15,657 | 11,743 | 3.4 |
| Essex | 74,843 | 56,132 | 29.2 | 57,765 | 43,324 | 29.3 | 132,608 | 99,456 | 29.2 |
| Grey | 17,195 | 12,896 | 6.7 | 12,639 | 9,479 | 6.4 | 29,834 | 22,375 | 6.6 |
| Huron | 4,406 | 3,305 | 1.7 | 4,000 | 3,000 | 2.0 | 8,406 | 6,305 | 1.9 |
| Kent | 22,504 | 16,878 | 8.8 | 13,571 | 10,178 | 6.9 | 36,075 | 27,056 | 7.9 |
| Lambton | 25,288 | 18,966 | 9.9 | 11,994 | 8,996 | 6.1 | 37,282 | 27,962 | 8.2 |
| Middlesex | 57,148 | 42,861 | 22.2 | 62,305 | 46,729 | 31.6 | 119,453 | 89,590 | 26.3 |
| Oxford | 20,308 | 15,231 | 7.9 | 15,177 | 11,383 | 7.6 | 35,485 | 26,614 | 7.8 |
| Perth | 11,340 | 8,505 | 4.4 | 10,634 | 7,976 | 5.4 | 21,974 | 16,481 | 4.9 |
| REGION TOTAL | 256,598 | 192,449 | 100.0 | 197,321 | 147,992 | 100.0 | 453,919 | 340,441 | 100.0 |

TABLE II/5
Southwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .87 Year 1973

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 8,147 | 7,088 | 3.5 | 5,885 | 5,120 | 3.6 | 14,032 | 12,208 | 3.5 |
| Elgin | 11,308 | 9,838 | 4.9 | 6,003 | 5,223 | 3.6 | 17,311 | 15,601 | 4.4 |
| Essex | 58,026 | 50,483 | 25.2 | 41,277 | 35,911 | 24.9 | 99,303 | 86,394 | 25.1 |
| Grey | 16,296 | 14,178 | 7.1 | 7,895 | 6,869 | 4.8 | 24,191 | 21,047 | 6.1 |
| Huron | 4,161 | 3,620 | 1.8 | 1,565 | 1,361 | 0.9 | 5,726 | 4,981 | 1.4 |
| Kent | 21,065 | 18,327 | 9.1 | 11,550 | 10,048 | 7.0 | 32,615 | 28,375 | 8.2 |
| Lambton | 17,914 | 15,175 | 7.8 | 7,259 | 6,315 | 4.4 | 25,173 | 21,490 | 6.4 |
| Middlesex | 61,139 | 53,191 | 26.5 | 62,418 | 54,304 | 37.7 | 123,557 | 107,495 | 31.2 |
| Oxford | 22,417 | 19,503 | 9.7 | 11,704 | 10,182 | 7.1 | 34,121 | 29,685 | 8.6 |
| Perth | 10,123 | 8,807 | 4.4 | 10,007 | 8,707 | 6.0 | 20,130 | 17,514 | 5.1 |
| REGION TOTAL | 230,596 | 200,210 | 100.0 | 165,563 | 144,040 | 100.0 | 396,159 | 344,250 | 100.0 |

TABLE II/5

Southwestern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .95 Year 1972

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 5,804 | 5,514 | 3.2 | 2,632 | 2,500 | 1.9 | 8,436 | 8,014 | 2.6 |
| Elgin | 8,896 | 8,451 | 4.8 | 2,958 | 2,810 | 2.1 | 11,854 | 11,261 | 3.7 |
| Essex | 55,667 | 52,884 | 30.3 | 37,707 | 35,822 | 27.2 | 93,374 | 88,706 | 29.0 |
| Grey | 12,153 | 11,545 | 6.6 | 5,577 | 5,298 | 4.0 | 17,730 | 16,843 | 5.5 |
| Huron | 2.763 | 2,625 | 1.5 | 1,633 | 1,551 | 1.2 | 4,396 | 4,176 | 1.4 |
| Kent | 12,261 | 11,648 | 6.7 | 12,226 | 11,614 | 8.8 | 24,487 | 23,262 | 7.6 |
| Lambton | 11,113 | 10,557 | 6.1 | 9,875 | 9,381 | 7.1 | 20,988 | 19,938 | 6.5 |
| Middlesex | 53,830 | 51,139 | 29.3 | 55,183 | 52,423 | 39.8 | 109,013 | 103,562 | 33.8 |
| Oxford | 13,180 | 12,521 | 7.2 | 7,267 | 6,903 | 5.3 | 20,447 | 19,424 | 6.3 |
| Perth | 8,049 | 7,646 | 4.3 | 3,566 | 3,388 | 2.6 | 11,615 | 11,034 | 3.6 |
| REGION TOTAL | 183,716 | 174,530 | 100.0 | 138,624 | 131,690 | 100.0 | 322,340 | 306,220 | 100.0 |

TABLE II/5

Southwestern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator 1.00 Year 1971

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Bruce | 5,111 | 5,111 | 2.9 | 1,598 | 1,598 | 1.5 | 6,709 | 6,709 | 2.4 |
| Elgin | 5,509 | 5,509 | 3.2 | 2,495 | 2,495 | 2.3 | 8,004 | 8,004 | 2.8 |
| Essex | 59,082 | 59,082 | 33.9 | 38,296 | 38,296 | 34.9 | 97,378 | 97,378 | 34.3 |
| Grey | 8,947 | 8,947 | 5.1 | 8,719 | 8,719 | 8.0 | 17,666 | 17,666 | 6.2 |
| Huron | 1,885 | 1,885 | 1.1 | 602 | 602 | 0.5 | 2,487 | 2,487 | 0.9 |
| Kent | 9,236 | 9,236 | 5.3 | 6,329 | 6,329 | 5.8 | 15,565 | 15,565 | 5.5 |
| Lambton | 9,796 | 9,796 | 5.6 | 8,803 | 8,803 | 8.0 | 18,599 | 18,599 | 6.5 |
| Middlesex | 59,843 | 59,843 | 34.3 | 32,319 | 32,319 | 29.5 | 92,162 | 92,162 | 32.4 |
| Oxford | 8,310 | 8,310 | 4.8 | 4,624 | 4,624 | 4.2 | 12,934 | 12,934 | 4.6 |
| Perth | 6,714 | 6,714 | 3.8 | 5,799 | 5,799 | 5.3 | 12,513 | 12,513 | 4.4 |
| REGION TOTAL | 174,433 | 174,433 | 100.0 | 109,584 | 109,584 | 100.0 | 284,017 | 284,017 | 100.0 |

Table II/6 POPULATION OF THE SOUTHWESTERN ONTARIO ECONOMIC REGION, 1971-1981

| Counties | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bruce | 45,800 | 47,900 | 48,700 | 49,600 | 50,400 | 57,472 | 59,500 | 59,058 | 59,849 | 60,640 | 64,084 |
| Elgin | 66,800 | 67,200 | 68,000 | 68,900 | 69,700 | 69,092 | 69,600 | 69,971 | 70,411 | 70,851 | 71,395 |
| Essex | 319,000 | 309,600 | 314,200 | 319,500 | 323,800 | 310,362 | 311,100 | 315,660 | 318,309 | 320,958 | 317,824 |
| Grey | 67,700 | 66,900 | 67,400 | 68,200 | 68,800 | 72,176 | 73,300 | 74,132 | 75,110 | 76,087 | 77,157 |
| Huron | 58,900 | 52,500 | 52,000 | 51,800 | 51,400 | 56,007 | 56,600 | 56,349 | 56,520 | 56,691 | 56,510 |
| Kent | 103,900 | 101,500 | 102,200 | 103,100 | 103,800 | 106,130 | 107,100 | 107,608 | 108,347 | 109,085 | 109,809 |
| Lambton | 122,100 | 115,000 | 115,800 | 117,100 | 118,100 | 120,576 | 121,800 | 123,619 | 125,141 | 126,663 | 126,181 |
| Middlesex | 288,400 | 286,400 | 292,800 | 299,500 | 305,300 | 303,745 | 307,900 | 307,729 | 309,722 | 311,714 | 317,033 |
| Oxford | 82,100 | 80,700 | 81,400 | 82,300 | 83,000 | 85,337 | 86,100 | 87,485 | 88,560 | 89,634 | 90,228 |
| Perth | 64,300 | 63,200 | 63,500 | 64,100 | 64,500 | 66,279 | 66,900 | 66,338 | 66,367 | 66,396 | 67,368 |
| TOTAL | 1,219,000 | 1,190,900 | 1,206,000 | 1,224,100 | 1,238,800 | 1,247,176 | 1,259,900 | 1,267,949 | 1,278,336 | 1,288,719 | 1,297,589 |

Source: The Financial Post — Survey of Markets 1971-77/78

TABLE II/7

ESTIMATED TOTAL OUTPUT OF MINERAL AGGREGATE IN SOUTHWESTERN ONTARIO, 1976-1979

| County | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|
| | | (Tonnes) | | |
| Bruce | 1,616,581 | 1,785,233 | 1,873,811 | 1,863,351 |
| Elgin | 782,099 | 651,613 | 577,632 | 639,437 |
| Essex | 2,721,398 | 2,866,435 | 3,389,340 | 3,970,384 |
| Grey | 1,805,142 | 2,309,381 | 2,161,843 | 2,237,576 |
| Huron | 1,110,473 | 962,094 | 962,094 | 1,000,000 |
| Kent | 1,391,939 | 1,253,003 | 1,300,559 | 1,251,765 |
| Lambton | 1,204,026 | 970,145 | 868,540 | 886,400 |
| Middlesex | 5,487,682 | 6,749,436 | 6,789,351 | 6,085,021 |
| Oxford | 4,414,538 | 4,744,372 | 5,298,332 | 4,985,488 |
| Perth | 1,380,421 | 1,535,238 | 1,464,916 | 2,000,600 |
| TOTAL | 21,914,299 | 23,826,950 | 24,686,418 | 24,920,022 |

# APPENDIX III
# EASTERN ONTARIO ECONOMIC REGION

Table III/1 POPULATION OF THE EASTERN ONTARIO ECONOMIC REGION, 1971-1981

| COUNTY | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frontenac | 106,100 | 102,100 | 102,700 | 103,700 | 104,400 | 108,800 | 109,300 | 110,667 | 112,238 | 113,810 | 115,381 |
| Hastings | 100,100 | 100,000 | 100,700 | 101,900 | 102,700 | 106,700 | 107,000 | 108,547 | 110,084 | 111,621 | 113,158 |
| Lanark | 44,200 | 42,300 | 42,400 | 42,700 | 42,800 | 44,500 | 44,600 | 45,007 | 45,518 | 46,030 | 46,541 |
| Leeds & Grenville | 75,500 | 74,300 | 74,600 | 75,000 | 75,200 | 79,300 | 79,400 | 80,280 | 81,417 | 82,554 | 83,691 |
| Lennox & Addington | 27,600 | 28,800 | 29,500 | 30,100 | 30,700 | 32,700 | 33,400 | 34,171 | 35,114 | 36,057 | 37,000 |
| Ottawa-Carleton | 464,300 | 470,000 | 480,900 | 492,200 | 502,100 | 514,000 | 530,000 | 537,114 | 584,054 | 558,993 | 569,932 |
| Prescott & Russell | 51,700 | 54,200 | 55,000 | 56,100 | 56,900 | 49,200 | 49,700 | 51,243 | 50,739 | 50,236 | 49,732 |
| Prince Edward | 21,900 | 20,400 | 20,200 | 20,000 | 19,900 | 22,900 | 23,000 | 23,167 | 23,767 | 24,367 | 24,967 |
| Renfrew | 94,700 | 90,900 | 90,800 | 91,100 | 91,200 | 90,000 | 88,700 | 89,120 | 88,740 | 88,360 | 87,980 |
| Stormont, Dundas & Glengarry | 100,200 | 87,400 | 97,500 | 98,000 | 98,400 | 100,000 | 99,400 | 103,573 | 105,513 | 107,453 | 109,393 |
| TOTAL | 1,086,300 | 1,070,400 | 1,094,300 | 1,110,800 | 1,124,300 | 1,148,100 | 1,164,500 | 1,182,889 | 1,201,184 | 1,219,481 | 1,237,775 |

Table III/2

## EASTERN ONTARIO ECONOMIC REGION — RETAIL SALES

(1971 Constant Dollars in Thousands)

| COUNTY | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frontenac | 157,700 | 165,777 | 167,282 | 157,187 | 157,338 | 178,429 | 188,934 | 182,290 | 177,782 | 183,130 | 184,530 |
| Hastings | 156,500 | 164,824 | 166,491 | 156,723 | 157,065 | 178,117 | 183,227 | 179,263 | 174,627 | 179,698 | 180,914 |
| Lanark | 63,300 | 66,254 | 66,579 | 62,365 | 62,184 | 70,511 | 70,239 | 69,474 | 67,455 | 69,219 | 69,515 |
| Leeds & Grenville | 101,200 | 105,958 | 106,508 | 99,691 | 99,386 | 112,718 | 114,619 | 112,304 | 109,162 | 112,123 | 112,698 |
| Lennox & Addington | 28,300 | 30,172 | 30,783 | 29,289 | 29,693 | 33,666 | 34,945 | 34,299 | 33,528 | 34,604 | 34,928 |
| Ottawa-Carleton | 755,100 | 805,958 | 823,043 | 784,312 | 795,222 | 901,746 | 927,024 | 914,477 | 893,683 | 922,174 | 930,631 |
| Prescott & Russell | 55,400 | 58,627 | 59,455 | 56,337 | 56,724 | 64,277 | 65,580 | 64,970 | 63,012 | 64,893 | 65,377 |
| Prince Edward | 22,600 | 23,356 | 23,219 | 21,484 | 21,160 | 24,002 | 24,985 | 24,021 | 23,298 | 23,885 | 23,968 |
| Renfrew | 122,900 | 128,503 | 128,936 | 120,479 | 119,863 | 135,910 | 127,490 | 129,498 | 125,240 | 128,072 | 128,233 |
| Stormont, Dundas & Glengarry | 123,600 | 129,457 | 130,167 | 121,793 | 121,433 | 137,656 | 132,945 | 134,459 | 130,429 | 133,727 | 134,202 |
| TOTAL | 1,586,600 | 1,678,886 | 1,702,463 | 1,609,660 | 1,620,068 | 1,837,032 | 1,871,988 | 1,845,055 | 1,798,216 | 1,851,525 | 1,864,996 |

TABLE III/3 EASTERN ONTARIO ECONOMIC REGION — DISPOSABLE INCOME, 1971-1981

(1971 Constant Dollars in Thousands)

| County | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frontenac | 302,800 | 318,732 | 321,812 | 327,434 | 334,949 | 374,439 | 390,856 | 387,157 | 380,005 | 393,579 | 398,463 |
| Hastings | 281,900 | 300,524 | 306,596 | 313,910 | 318,771 | 328,865 | 340,827 | 342,830 | 334,601 | 344,885 | 347,713 |
| Lanark | 94,200 | 100,477 | 102,551 | 105,641 | 105,939 | 118,828 | 121,899 | 122,160 | 119,873 | 124,128 | 125,645 |
| Leeds & Grenville | 184,100 | 197,617 | 202,726 | 206,414 | 208,669 | 229,801 | 236,634 | 237,235 | 232,582 | 240,650 | 243,429 |
| Lennox & Addington | 67,600 | 74,166 | 77,397 | 80,757 | 82,184 | 93,579 | 98,253 | 98,319 | 97,080 | 101,056 | 102,752 |
| Ottawa-Carleton | 1,780,800 | 1,890,467 | 1,922,076 | 1,983,153 | 2,061,365 | 2,187,656 | 2,348,107 | 2,323,489 | 2,281,687 | 2,364,168 | 2,394,356 |
| Prescott & Russell | 95,800 | 108,198 | 115,391 | 118,779 | 122,457 | 121,633 | 123,995 | 128,571 | 125,800 | 129,945 | 131,253 |
| Prince Edward | 48,700 | 52,288 | 53,650 | 56,955 | 54,539 | 58,292 | 58,125 | 59,500 | 58,026 | 59,768 | 60,222 |
| Renfrew | 221,000 | 233,651 | 236,763 | 240,881 | 241,775 | 259,663 | 263,017 | 264,986 | 258,566 | 266,462 | 268,602 |
| Stormont, Dundas & Glengarry | 222,300 | 238,418 | 244,415 | 248,223 | 250,922 | 270,137 | 272,510 | 276,269 | 270,028 | 278,673 | 281,260 |
| TOTAL | 3,299,200 | 3,514,538 | 3,583,377 | 3,682,147 | 3,781,570 | 4,042,893 | 4,254,223 | 4,240,516 | 4,158,248 | 4,303,314 | 4,353,695 |

TABLE III/4

RETAIL SALES PER CAPITA IN EASTERN ONTARIO ECONOMIC REGION, 1971-1981

(In 1971 Constant Dollars)

| County | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frontenac | 1,486 | 1,624 | 1,629 | 1,516 | 1,507 | 1,640 | 1,729 | 1,647 | 1,584 | 1,609 | 1,599 |
| Hastings | 1,563 | 1,648 | 1,653 | 1,538 | 1,529 | 1,669 | 1,712 | 1,651 | 1,586 | 1,610 | 1,599 |
| Lanark | 1,432 | 1,566 | 1,570 | 1,461 | 1,453 | 1,585 | 1,575 | 1,544 | 1,482 | 1,504 | 1,494 |
| Leeds & Grenville | 1,340 | 1,426 | 1,428 | 1,329 | 1,322 | 1,421 | 1,444 | 1,399 | 1,341 | 1,358 | 1,347 |
| Lennox & Addington | 1,025 | 1,048 | 1,043 | 973 | 967 | 1,030 | 1,046 | 1,004 | 955 | 960 | 944 |
| Ottawa-Carleton | 1,626 | 1,715 | 1,711 | 1,593 | 1,584 | 1,754 | 1,749 | 1,703 | 1,631 | 1,650 | 1,633 |
| Prescott & Russell | 1,072 | 1,082 | 1,081 | 1,004 | 997 | 1,306 | 1,320 | 1,268 | 1,242 | 1,292 | 1,315 |
| Prince Edward | 1,032 | 1,145 | 1,149 | 1,074 | 1,063 | 1,048 | 1,086 | 1,037 | 980 | 980 | 960 |
| Renfrew | 1,298 | 1,414 | 1,420 | 1,322 | 1,314 | 1,510 | 1,437 | 1,453 | 1,411 | 1,449 | 1,458 |
| Stormont, Dundas & Glengarry | 1,234 | 1,481 | 1,335 | 1,243 | 1,234 | 1,377 | 1,358 | 1,298 | 1,236 | 1,245 | 1,227 |
| AVERAGE TOTAL | 1,311 | 1,415 | 1,402 | 1,305 | 1,297 | 1,434 | 1,446 | 1,400 | 1,345 | 1,366 | 1,358 |
| ONTARIO TOTAL | 1,542 | 1,514 | 1,618 | 1,506 | 1,497 | 1,620 | 1,575 | 1,580 | 1,587 | 1,594 | 1,601 |
| Market Rating Index (%) | 85.0 | 93.5 | 86.7 | 86.7 | 86.6 | 88.5 | 91.8 | 88.6 | 84.8 | 85.7 | 84.8 |

TABLE III/5

DISPOSABLE INCOME PER CAPITA IN EASTERN ONTARIO ECONOMIC REGION, 1971-1981

(In 1971 Constant Dollars)

| County | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frontenac | 2,854 | 3,122 | 3,134 | 3,158 | 3,208 | 3,442 | 3,576 | 3,498 | 3,386 | 3,458 | 3,453 |
| Hastings | 2,816 | 3,005 | 3,045 | 3,081 | 3,104 | 3,082 | 3,185 | 3,158 | 3,040 | 3,090 | 3,073 |
| Lanark | 2,131 | 2,375 | 2,419 | 2,474 | 2,475 | 2,670 | 2,733 | 2,714 | 2,634 | 2,697 | 2,700 |
| Leeds & Grenville | 2,438 | 2,660 | 2,718 | 2,752 | 2,775 | 2,898 | 2,980 | 2,955 | 2,857 | 2,915 | 2,909 |
| Lennox & Addington | 2,449 | 2,575 | 2,624 | 2,683 | 2,677 | 2,862 | 2,942 | 2,877 | 2,765 | 2,803 | 2,777 |
| Ottawa-Carleton | 3,835 | 4,022 | 3,997 | 4,029 | 4,105 | 4,256 | 4,430 | 4,326 | 4,163 | 4,229 | 4,201 |
| Prescott & Russell | 1,853 | 1,996 | 2,098 | 2,117 | 2,152 | 2,472 | 2,495 | 2,509 | 2,479 | 2,587 | 2,639 |
| Prince Edward | 2,224 | 2,563 | 2,656 | 2,848 | 2,741 | 2,546 | 2,527 | 2,568 | 2,441 | 2,453 | 2,412 |
| Renfrew | 2,334 | 2,570 | 2,607 | 2,644 | 2,651 | 2,885 | 2,965 | 2,973 | 2,914 | 3,016 | 3,053 |
| Stormont, Dundas & Glengarry | 2,219 | 2,728 | 2,507 | 2,533 | 2,550 | 2,701 | 2,742 | 2,667 | 2,559 | 2,593 | 2,571 |
| AVERAGE TOTAL | 2,515 | 2,762 | 2,781 | 2,832 | 2,844 | 2,941 | 3,058 | 3,025 | 2,924 | 2,984 | 2,979 |
| ONTARIO TOTAL | 3,135 | 3,289 | 3,314 | 3,369 | 3,419 | 3,668 | 3,757 | 3,811 | 3,909 | 4,006 | 4,104 |
| Income Rating Index (%) | 80.2 | 84.0 | 83.9 | 84.1 | 83.2 | 80.2 | 81.4 | 79.4 | 74.8 | 74.5 | 72.6 |

TABLE III/6 Building Permits All dollar amounts are thousands of dollars

Eastern Region Summary Totals Implicit G.N.E. Deflator .49 Year 1979

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 28,290 | 13,862 | 9.6 | 24,233 | 11,874 | 11.4 | 52.523 | 25,736 | 10.4 |
| Hastings | 17,079 | 8,368 | 5.8 | 13,340 | 6,537 | 6.3 | 30,419 | 14,905 | 6.0 |
| Lanark | 10,357 | 5,075 | 3.5 | 9,478 | 4,644 | 4.5 | 19,835 | 9,719 | 3.9 |
| Leeds & Grenville | 27,315 | 13,384 | 9.3 | 10,259 | 5,028 | 4.9 | 37,574 | 18,412 | 7.5 |
| Lennox & Addington | 5,157 | 2,527 | 1.8 | 2,724 | 1,335 | 1.3 | 7,881 | 3,862 | 1.6 |
| Ottawa-Carleton | 161,417 | 79,094 | 55.2 | 108,925 | 53,373 | 51.4 | 270,342 | 132,467 | 53.6 |
| Prescott & Russell | 14,493 | 7,102 | 5.0 | 7,562 | 3,705 | 3.6 | 22,055 | 10,807 | 4.4 |
| Prince Edward | 1,659 | 813 | 0.6 | 359 | 175 | 0.2 | 2,018 | 988 | 0.4 |
| Renfrew | 14,017 | 6,868 | 4.8 | 4,974 | 2,438 | 2.4 | 18,991 | 9,306 | 3.8 |
| Stormont, Dundas & Glengarry | 12,801 | 6,273 | 4.4 | 29,670 | 14,538 | 14.0 | 42,471 | 20,811 | 8.4 |
| REGION TOTAL | 292,585 | 143,366 | 100.0 | 211,524 | 103,647 | 100.0 | 504,109 | 247,013 | 100.0 |

TABLE III/6

Eastern Region Summary Totals

Building Permits

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .54 Year 1978

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 34,574 | 18,670 | 9.6 | 19,966 | 10,782 | 9.1 | 54,545 | 29,452 | 9.4 |
| Hastings | 22,895 | 12,363 | 6.3 | 18,367 | 9,918 | 8.4 | 41,262 | 22,281 | 7.1 |
| Lanark | 8,441 | 4,557 | 2.3 | 3,946 | 2,132 | 1.8 | 12,387 | 6,689 | 2.0 |
| Leeds & Grenville | 25,427 | 13,731 | 7.0 | 19,757 | 10,669 | 9.0 | 45,184 | 24,400 | 7.9 |
| Lennox & Addington | 6,159 | 3,325 | 1.7 | 5,822 | 3,144 | 2.7 | 11,981 | 6,469 | 2.0 |
| Ottawa-Carleton | 216,138 | 116,714 | 59.7 | 112,332 | 60,660 | 51.4 | 328,470 | 177,374 | 56.6 |
| Prescott & Russell | 14,138 | 7,634 | 3.9 | 8,304 | 4,484 | 3.8 | 22,442 | 12,118 | 3.9 |
| Prince Edward | 2,571 | 1,390 | 0.7 | 1,926 | 1,039 | 0.9 | 4,497 | 2,429 | 0.8 |
| Renfrew | 15,165 | 8,189 | 4.2 | 5,920 | 3,197 | 2.7 | 21,085 | 11,386 | 3.6 |
| Stormont, Dundas & Glengarry | 16,488 | 8,904 | 4.6 | 22,286 | 12,034 | 10.2 | 38,774 | 20,938 | 6.7 |
| REGION TOTAL | 361,996 | 195,477 | 100.0 | 218,626 | 118,059 | 100.0 | 580,622 | 313,536 | 100.0 |

TABLE III/6

Building Permits

All dollar amounts are thousands of dollars

Eastern Region Summary Totals

Implicit G.N.E. Deflator 58 Year 1977

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 38,785 | 22,495 | 10.4 | 17,859 | 10,359 | 7.3 | 56,644 | 32,854 | 9.2 |
| Hastings | 28,577 | 16,574 | 7.7 | 14,851 | 8,614 | 6.1 | 43,428 | 25,188 | 7.1 |
| Lanark | 13,427 | 7,787 | 3.6 | 3,020 | 1,752 | 1.2 | 16,447 | 9,539 | 2.7 |
| Leeds & Grenville | 29,758 | 17,259 | 8.0 | 9,803 | 5,686 | 4.0 | 39,561 | 22,945 | 6.4 |
| Lennox & Addington | 7,174 | 4,161 | 1.9 | 4,627 | 2,684 | 1.9 | 11,801 | 6,845 | 1.9 |
| Ottawa-Carleton | 207,053 | 120,091 | 55.7 | 136,608 | 79,233 | 55.9 | 343,661 | 199,324 | 55.8 |
| Prescott & Russell | 13,268 | 7,695 | 3.6 | 2,600 | 1,508 | 1.1 | 15,868 | 9,203 | 2.6 |
| Prince Edward | 2,147 | 1,245 | 0.6 | 1,972 | 1,144 | 0.8 | 4,119 | 2,389 | 0.7 |
| Renfrew | 13,948 | 8,089 | 3.8 | 13,808 | 8,009 | 5.7 | 27,756 | 16,098 | 4.5 |
| Stormont, Dundas & Glengarry | 17,424 | 10,106 | 4.7 | 39,049 | 22,649 | 16.0 | 56,473 | 32,755 | 9.1 |
| REGION TOTAL | 371,561 | 215,502 | 100.0 | 244,197 | 141,638 | 100.0 | 615,758 | 356,974 | 100.0 |

TABLE III/6

Building Permits

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .62 Year 1976

Eastern Region Summary Totals

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 39,499 | 24,489 | 10.7 | 15,949 | 9,888 | 7.6 | 55,448 | 34,377 | 9.7 |
| Hastings | 33,507 | 20,774 | 9.2 | 20,365 | 12,627 | 9.7 | 53,872 | 33,401 | 9.4 |
| Lanark | 12,581 | 7,800 | 3.5 | 8,867 | 5,498 | 4.2 | 21,448 | 13,298 | 3.7 |
| Leeds & Grenville | 22,068 | 13,683 | 6.1 | 10,085 | 6,252 | 4.8 | 32,153 | 19,935 | 5.6 |
| Lennox & Addington | 16,054 | 9,954 | 4.4 | 1,862 | 1,154 | 0.9 | 17,916 | 11,108 | 3.1 |
| Ottawa-Carleton | 183,486 | 113,761 | 50.2 | 132,682 | 82,263 | 63.1 | 316,168 | 196,024 | 55.0 |
| Prescott & Russell | 7,437 | 4,611 | 2.1 | 4,142 | 2,568 | 2.0 | 11,579 | 7,179 | 2.0 |
| Prince Edward | 3,492 | 2,165 | 1.0 | 1,174 | 728 | 0.6 | 4,666 | 2,893 | 0.8 |
| Renfrew | 17,409 | 10,794 | 4.8 | 4,076 | 2,527 | 1.9 | 21,485 | 13,321 | 3.7 |
| Stormont, Dundas & Glengarry | 29,234 | 18,125 | 8.0 | 10,888 | 6,750 | 5.2 | 40,122 | 24,875 | 7.0 |
| REGION TOTAL | 364,767 | 226,156 | 100.0 | 210,090 | 130,255 | 100.0 | 574,857 | 356,411 | 100.0 |

TABLE III/6

Eastern Region Summary Totals

Building Permits

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .68 Year 1975

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 20,603 | 14,010 | 7.7 | 21,984 | 14,949 | 8.3 | 42,587 | 28,959 | 8.0 |
| Hastings | 34,923 | 23,747 | 13.0 | 14,234 | 9,679 | 5.4 | 49,157 | 33,426 | 9.2 |
| Lanark | 12,694 | 8,632 | 4.7 | 2,679 | 1,821 | 1.0 | 15,373 | 10,453 | 2.9 |
| Leeds & Grenville | 21,982 | 14,948 | 8.2 | 8,846 | 6,015 | 3.3 | 30,828 | 20,963 | 5.8 |
| Lennox & Addington | 9,869 | 6,711 | 3.7 | 3,265 | 2,220 | 1.2 | 13,134 | 8,931 | 2.5 |
| Ottawa-Carleton | 128,983 | 87,708 | 48.2 | 185,200 | 125,936 | 69.6 | 314,183 | 213,644 | 58.8 |
| Prescott & Russell | 6,674 | 4,538 | 2.5 | 2,550 | 1,736 | 1.0 | 9,224 | 6,274 | 1.7 |
| Prince Edward | 3,069 | 2,087 | 1.2 | 678 | 461 | 0.3 | 3,747 | 2,548 | 0.7 |
| Renfrew | 14,574 | 9,910 | 5.4 | 9,638 | 6,554 | 3.6 | 24,212 | 16,464 | 4.5 |
| Stormont, Dundas & Glengarry | 14,538 | 9,886 | 5.2 | 16,768 | 11,402 | 6.3 | 31,306 | 21,288 | 5.9 |
| REGION TOTAL | 267,909 | 182,177 | 100.0 | 268,842 | 180,773 | 100.0 | 533,751 | 362,950 | 100.0 |

TABLE III/6

Eastern Region Summary Totals

Building Permits

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .75 Year 1974

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 19,752 | 14,814 | 7.5 | 30,249 | 22,687 | 11.1 | 50,001 | 37,501 | 9.3 |
| Hastings | 29,278 | 21,959 | 11.2 | 17,349 | 13,011 | 6.4 | 46,627 | 34,970 | 8.7 |
| Lanark | 7,887 | 5,915 | 3.0 | 5,012 | 3,759 | 1.8 | 12,899 | 9,674 | 2.4 |
| Leeds & Grenville | 15,953 | 11,965 | 6.1 | 8,801 | 6,601 | 3.2 | 24,754 | 18,566 | 4.6 |
| Lennox & Addington | 7,492 | 5,619 | 2.9 | 4,012 | 3,009 | 1.5 | 11,504 | 8,628 | 2.2 |
| Ottawa-Carleton | 149,118 | 111,839 | 56.8 | 183,651 | 137,739 | 67.1 | 332,769 | 249,578 | 62.1 |
| Prescott & Russell | 5,349 | 4,012 | 2.0 | 3,665 | 2,749 | 1.3 | 9,014 | 6,761 | 1.7 |
| Prince Edward | 2,810 | 2,108 | 1.1 | 612 | 459 | 0.2 | 3,422 | 2,567 | 0.6 |
| Renfrew | 10,806 | 8,105 | 4.1 | 11,850 | 8,885 | 4.3 | 22,656 | 16,990 | 4.2 |
| Stormont, Dundas & Glengarry | 13,893 | 10,420 | 5.3 | 8,380 | 6,285 | 3.1 | 22,273 | 16,705 | 4.2 |
| REGION TOTAL | 262,338 | 196,756 | 100.0 | 273,581 | 205,184 | 100.0 | 535,919 | 401,940 | 100.0 |

TABLE III/6

Building Permits

All dollar amounts are thousands of dollars

Eastern Region Summary Totals

Implicit G.N.E. Deflator .87 Year 1973

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 25,802 | 22,448 | 8.1 | 15,951 | 13,877 | 8.2 | 41,753 | 36,325 | 8.1 |
| Hastings | 22,750 | 19,792 | 7.1 | 7,974 | 6,938 | 4.1 | 30,724 | 26,730 | 6.0 |
| Lanark | 8,351 | 7,265 | 2.6 | 3,946 | 3,433 | 2.0 | 12,297 | 10,698 | 2.4 |
| Leeds & Grenville | 14,563 | 12,670 | 4.6 | 6,852 | 5,961 | 3.5 | 21,415 | 18,631 | 4.2 |
| Lennox & Addington | 7,625 | 6,634 | 2.4 | 3,821 | 3,324 | 2.0 | 11,446 | 9,958 | 2.2 |
| Ottawa-Carleton | 212,854 | 185,183 | 66.5 | 135,021 | 117,468 | 69.2 | 347,875 | 302,651 | 67.5 |
| Prescott & Russell | 4,913 | 4,274 | 1.5 | 3,637 | 3,208 | 1.9 | 8,600 | 7,482 | 1.7 |
| Prince Edward | 2,683 | 2,335 | 0.8 | 1,854 | 1,612 | 0.9 | 4,537 | 3,947 | 0.9 |
| Renfrew | 8,100 | 7,047 | 2.5 | 7,348 | 6,393 | 3.8 | 15,448 | 13,440 | 3.0 |
| Stormont, Dundas & Glengarry | 12,244 | 10,652 | 3.9 | 8,794 | 7,652 | 4.4 | 21,308 | 18,304 | 4.0 |
| REGION TOTAL | 319,885 | 278,300 | 100.0 | 195,198 | 169,865 | 100.0 | 515,133 | 448,166 | 100.0 |

TABLE III/6

Building Permits

All dollar amounts are thousands of dollars

Eastern Region Summary Totals

Implicit G.N.E. Deflator .95 Year 1972

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 24,822 | 23,581 | 10.3 | 27,349 | 25,982 | 14.2 | 52,171 | 49,563 | 12.0 |
| Hastings | 20,547 | 19,519 | 8.5 | 9,359 | 8,892 | 4.8 | 29,906 | 28,411 | 6.9 |
| Lanark | 4,812 | 4,571 | 2.0 | 3,654 | 3,472 | 1.9 | 8,466 | 8,043 | 1.9 |
| Leeds & Grenville | 8,626 | 8,195 | 3.6 | 5,980 | 5,681 | 3.1 | 14,606 | 13,876 | 3.4 |
| Lennox & Addington | 4,736 | 4,500 | 2.0 | 1,372 | 1,303 | 0.7 | 6,108 | 5,803 | 1.4 |
| Ottawa-Carleton | 161,002 | 152,952 | 66.5 | 131,320 | 124,754 | 67.9 | 292,322 | 277,706 | 67.1 |
| Prescott & Russell | 2,681 | 2,547 | 1.1 | 3,790 | 3,600 | 2.0 | 6,471 | 6,147 | 1.5 |
| Prince Edward | 1,349 | 1,282 | 0.5 | 483 | 458 | 0.2 | 1,832 | 1,740 | 0.4 |
| Renfrew | 7,179 | 6,819 | 3.0 | 2,578 | 2,451 | 1.3 | 9,757 | 9,270 | 2.2 |
| Stormont, Dundas & Glengarry | 6,339 | 6,022 | 2.5 | 7,392 | 7,022 | 3.9 | 13,371 | 13,044 | 3.2 |
| REGION TOTAL | 242,093 | 229,988 | 100.0 | 193,277 | 183,615 | 100.0 | 435,370 | 413,603 | 100.0 |

TABLE III/6

Eastern Region Summary Totals

Building Permits

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator 1.00 Year 1971

| County, District or Regional Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Frontenac | 22,378 | 22,378 | 11.9 | 9,515 | 9,515 | 5.2 | 31,893 | 3 31,893 | 8.5 |
| Hastings | 16,095 | 16,095 | 8.5 | 13,924 | 13,924 | 7.6 | 30,019 | 30,019 | 8.1 |
| Lanark | 3,375 | 3,375 | 1.8 | 1,424 | 1,424 | 0.8 | 4,799 | 4,799 | 1.3 |
| Leeds & Grenville | 7,353 | 7,353 | 3.9 | 5,286 | 5,286 | 2.9 | 12,639 | 12,639 | 3.4 |
| Lennox & Addington | 5,965 | 5,965 | 3.2 | 7,894 | 7,894 | 4.3 | 13,859 | 13,859 | 3.7 |
| Ottawa-Carleton | 120,314 | 120,314 | 63.7 | 136,721 | 136,721 | 74.3 | 257,035 | 257,035 | 69.0 |
| Prescott & Russell | 1,678 | 1,678 | 0.9 | 600 | 600 | 0.3 | 2,278 | 2,278 | 0.6 |
| Prince Edward | 535 | 535 | 0.3 | 271 | 271 | 0.1 | 806 | 806 | 0.2 |
| Renfrew | 6,318 | 6,318 | 3.3 | 3,514 | 3,514 | 1.9 | 9,832 | 9,832 | 2.6 |
| Stormont, Dundas & Glengarry | 4,783 | 4,783 | 2.5 | 4,846 | 4,846 | 2.6 | 9,629 | 9,629 | 2.6 |
| REGION TOTAL | 188,794 | 188,794 | 100.0 | 183,995 | 183,995 | 100.0 | 372,789 | 372,789 | 100.0 |

TABLE III/7

TOTAL PRODUCTION OF MINERAL AGGREGATE, EASTERN ONTARIO ECONOMIC REGION, 1976-1978

| County | 1976 | 1977 | 1978 |
|---|---|---|---|
| | | (Tonnes) | |
| Prince Edward | 58,513 | 30,311 | 76,069 |
| Frontenac | 1,456,879 | 1,459,484 | 1,348,842 |
| Hastings | 1,271,933 | 1,203,219 | 930,653 |
| Lennox & Addington | 423,228 | 218,044 | 320,636 |
| Leeds | 776,493 | 355,250 | 565,872 |
| Glengarry | 140,491 | 148,464 | 144,477 |
| Stormont | 1,260,719 | 992,117 | 1,126,418 |
| Grenville | 424,262 | 425,122 | 424,692 |
| Dundas | 435,536 | 368,786 | 402,161 |
| Lanark | 36,427 | 324,327 | 190,377 |
| Prescott/Russell | 501,660 | 200,452 | 351,056 |
| Renfrew | 2,051,554 | 1,359,890 | 1,705,722 |
| Ottawa-Carleton | 6,789,585 | 6,703,521 | 6,735,306 |
| TOTAL | 15,627,280 | 13,788,987 | 14,312,281 |

# APPENDIX IV
# NORTHEASTERN ONTARIO ECONOMIC REGION

TABLE IV/1

POPULATION OF THE NORTHEASTERN ONTARIO ECONOMIC REGION, 1978-1981

| County | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|
| Algoma | 167,230 | 168,074 | 154,481 | 155,788 |
| Cochrane | 95,138 | 94,765 | 104,590 | 105,475 |
| Manitoulin | 4,136 | 4,172 | 4,208 | 4,243 |
| Nippissing | 50,228 | 45,893 | 57,705 | 58,193 |
| Parry Sound | 32,501 | 30,396 | 32,459 | 32,734 |
| Sudbury | 194,413 | 215,159 | 204,973 | 206,708 |
| Timiskaming | 47,274 | 37,548 | 42,678 | 43,039 |
| TOTAL | 590,920 | 596,007 | 601,094 | 606,180 |

TABLE IV/2

## RETAIL SALES/CAPITA IN NORTHEASTERN ONTARIO ECONOMIC REGION, 1976-1977

| Territorial District | Population | | Retail Sales | | Retail Sales/Capita | | | Average 1976-77 MRI | |
|---|---|---|---|---|---|---|---|---|---|
| | 1976 | 1977 | 1976 | 1977 | 1976 | 1977 | 1976-77 | Provincial | Regional |
| | | | (1000's of 1971 Dollars) | | (1971 Constant Dollars) | | | | |
| Sudbury (incl. RM) | 194,992 | 196,863 | 349,097 | 299,367 | 1,790.3 | 1,518.9 | 1,654.6 | .9867 | 1.0229 |
| Timiskaming | 43,760 | 43,750 | 65,962 | 59,778 | 1,507.4 | 1,364.8 | 1,436.1 | .8564 | .8878 |
| Nipissing | 81,739 | 82,760 | 144,138 | 140,170 | 1,763.4 | 1,691.7 | 1,727.5 | 1.0302 | 1.0679 |
| Manitoulin | 10,893 | 10,928 | 15,435 | 14,976 | 1,417.0 | 1,368.8 | 1,392.9 | .8306 | .8611 |
| Algoma | 122,883 | 124,154 | 193,966 | 185,549 | 1,578.5 | 1,492.8 | 1,535.7 | .9158 | .9494 |
| Cochrane | 93,825 | 94,681 | 153,868 | 147,567 | 1,640.0 | 1,556.7 | 1,598.4 | .9532 | .9881 |
| Parry Sound | 32,654 | 32,694 | 58,190 | 59,680 | 1,782.0 | 1,823.3 | 1,802.7 | 1.0750 | 1.1144 |
| REGIONAL TOTAL | 580,746 | 585,830 | 980,656 | 907,087 | 1,688.6 | 1,546.6 | 1,617.6 | .9650 | 1.0000 |
| **Ontario Total** | 8,264,465 | 8,458,049 | 13,994,631 | 14,062,059 | 1,693.3 | 1,660.6 | 1,676.9 | 1.0000 | n.a. |
| Region as % of Ontario | 7.03% | 6.93% | 7.01% | 6.45% | 99.7% | 93.1% | 96.5% | n.a. | n.a. |



## DISPOSABLE INCOME/CAPITA IN NORTHERN ONTARIO ECONOMIC REGION, 1976-1977

| Territorial District | Population | | Disposable Income | | Disposable Income/Capita | | | Average 1976-77 IRI | |
|---|---|---|---|---|---|---|---|---|---|
| | 1976 | 1977 | 1976 | 1977 | 1976 | 1977 | 1976-77 | Provincial | Regional |
| | | | (1000's of 1971 Dollars) | | (1971 Constant Dollars) | | | | |
| Algoma | 122,883 | 124,154 | 381,585 | 410,658 | 3,105.3 | 3,307.7 | 3,206.5 | .8614 | 1.0737 |
| Cochrane | 93,825 | 94,681 | 277,324 | 282,967 | 2,955.8 | 2,988.6 | 2,972.2 | .7984 | .9952 |
| Manitoulin | 10,893 | 10,928 | 16,997 | 23,535 | 1,560.4 | 2,153.6 | 1,857.0 | .4989 | .6218 |
| Nipissing | 81,739 | 82,760 | 238,901 | 246,133 | 2,922.7 | 2,974.1 | 2,948.4 | .7920 | .9872 |
| Parry Sound | 32,654 | 32,694 | 73,172 | 80,046 | 2,240.8 | 2,448.3 | 2,344.6 | .6290 | .7851 |
| Sudbury (incl. RM) | 194,992 | 196,863 | 587,535 | 643,524 | 3,013.1 | 3,260.9 | 3,141.0 | .8438 | 1.0517 |
| Timiskaming | 43,760 | 43,750 | 107,792 | 114,297 | 2,463.3 | 2,612.5 | 2,537.9 | .6818 | .8498 |
| REGIONAL TOTAL | 580,746 | 585,830 | 1,683,306 | 1,801,160 | 2,898.5 | 3,074.5 | 2,986.5 | .8023 | 1.0000 |
| **Ontario Total** | 8,264,465 | 8,458,049 | 30,366,849 | 31,890,813 | 3,674.4 | 3,770.5 | 3,772.5 | 1.0000 | n.a. |
| Regional as % of Ontario | 7.03% | 6.93% | 5.54% | 5.65% | 78.88% | 81.54% | 80.23% | n.a. | n.a. |

MRI = Market Rating Index  IRI = Income Rating Index

TABLE IV/3

## ESTIMATE OF ANNUAL AVERAGE USE OF MINERAL AGGREGATE FOR FLUX AND BACK-FILL IN NORTHEASTERN ONTARIO, 1978-1981

| | Flux | | Backfill | | Av. Tonnage Extracted | Aggregate Required Per tonne extracted % | Estimated Total Annual Requirements 1978-1981 (Thousands of Tones) | |
|---|---|---|---|---|---|---|---|---|
| | 1976 | Av. 1968-76 (Thousands of Tonnes) | 1976 | Av. 1968-76 | | | High | Low |
| Basis: Aggregate Consumption by Mining Industry in 1976 in Sudbury District extrapolated from Sudbury Mineral Aggregate Study | 540 | 640 | 1,260 | 860 | 14,000 | 14.0 | 2,000 | 1,600 |
| Cochrane District | (TGS, Dome Pamour) | | | | 10,067 | 6.0 | 604 | 500 |
| Nipissing District | (Adams Mine) | | | | 3,950 | 4.6 | 182 | 120 |
| Timiskaming District | (Kerr A., Sherman Mine) | | | | 4,100 | 4.7 | 193 | 130 |
| Algoma District | (Denison, Rio Algom, Algoma Steel) | | | | 7,060 | 10.0 | 706 | 600 |
| Manitoulin District | | | | | | | NIL | NIL |
| Parry Sound District | | | | | | | NIL | NIL |
| TOTAL | | | | | | | 3,685 | 2,950 |

TABLE IV/4

## BUILDING PERMITS IN NORTHEASTERN ONTARIO ECONOMIC REGION 1971-1979

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .49 Year 1979

Northeastern Region

| Municipality | Residential | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 51,474 | 25,222 | 44.1 | 36,279 | 17,777 | 30.5 | 87,753 | 42,999 | 37.2 |
| Cochrane | 14,641 | 7,174 | 12.5 | 19,271 | 9,443 | 16.2 | 33,912 | 16,617 | 14.4 |
| Manitoulin | 519 | 254 | 0.4 | 393 | 193 | 0.3 | 912 | 447 | 0.4 |
| Nipissing | 10,515 | 5,153 | 9.0 | 6,068 | 2,973 | 5.1 | 16,583 | 8,126 | 7.0 |
| Parry Sound | 5,595 | 2,741 | 4.8 | 674 | 330 | 0.6 | 6,269 | 3,071 | 2.6 |
| Sudbury District | 2,055 | 1,007 | 1.8 | 736 | 361 | 0.6 | 2,791 | 1,368 | 1.2 |
| Sudbury R.M. | 26,647 | 13,057 | 22.8 | 53,205 | 26,070 | 44.6 | 79,852 | 39,127 | 33.9 |
| Timiskaming | 5,340 | 2,617 | 4.6 | 2,466 | 1.208 | 2.1 | 7,806 | 3,825 | 3.3 |
| REGION TOTAL | 116,786 | 57,225 | 100.0 | 119,092 | 58,355 | 100.0 | 235,878 | 115,580 | 100.0 |

TABLE IV/4

All dollar amounts are thousands of dollars

Northeastern Region

Implicit G.N.E. Deflator .54 Year 1978

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 59,071 | 31,898 | 44.5 | 23,378 | 12,624 | 29.3 | 82,449 | 44,522 | 38.8 |
| Cochrane | 18,469 | 9,974 | 13.9 | 12,799 | 6,911 | 16.1 | 31,268 | 16,885 | 14.7 |
| Manitoulin | 1,061 | 573 | 0.7 | 39 | 21 | 0.0 | 1,100 | 594 | 0.5 |
| Nipissing | 12,618 | 6,814 | 9.5 | 7,457 | 4,027 | 9.4 | 20,075 | 10,841 | 9.5 |
| Parry Sound | 6,764 | 3,653 | 5.1 | 1,573 | 849 | 2.0 | 8,337 | 4,502 | 3.9 |
| Sudbury District | 3,080 | 1,663 | 2.3 | 829 | 448 | 1.0 | 3,909 | 2,111 | 1.8 |
| Sudbury R.M. | 23,747 | 12,823 | 17.9 | 24,423 | 13,189 | 30.6 | 48,170 | 26,012 | 22.7 |
| Timiskaming | 8.050 | 4,347 | 6.1 | 9,228 | 4,983 | 11.6 | 17,278 | 9,330 | 8.1 |
| REGION TOTAL | 132,860 | 71,745 | 100.0 | 79,726 | 43,052 | 100.0 | 212,586 | 114,797 | 100.0 |

TABLE IV/4
Northeastern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .58 Year 1977

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 51,386 | 29,804 | 34.5 | 14,311 | 8,300 | 21.2 | 65,697 | 38,104 | 30.4 |
| Cochrane | 21,775 | 12,630 | 14.6 | 9,842 | 5,707 | 14.6 | 31,617 | 18,337 | 14.6 |
| Manitoulin | 457 | 265 | 0.3 | 124 | 72 | 0.2 | 581 | 337 | 0.2 |
| Nipissing | 14,818 | 8,594 | 10.0 | 12,470 | 7,233 | 18.4 | 27,288 | 15,827 | 12.6 |
| Parry Sound | 5,493 | 3,186 | 3.7 | 2,453 | 1,422 | 3.6 | 7,946 | 4,608 | 3.7 |
| Sudbury District | 4,142 | 2,403 | 2.8 | 4,218 | 2,446 | 6.2 | 8,360 | 4,849 | 3.9 |
| Sudbury R.M. | 45,387 | 26,325 | 30.5 | 22,865 | 13,261 | 33.8 | 68,252 | 39,586 | 31.5 |
| Timiskaming | 5,319 | 3,085 | 3.6 | 1,343 | 779 | 2.0 | 6,662 | 3,864 | 3.1 |
| REGION TOTAL | 148,777 | 86,292 | 100.0 | 67,626 | 39,220 | 100.0 | 216,403 | 125,512 | 100.0 |

TABLE IV/4

Northeastern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .62 Year 1976

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 46,535 | 28,851 | 33.1 | 11,307 | 7,011 | 12.8 | 57,842 | 35,862 | 25.2 |
| Cochrane | 25,566 | 15,852 | 18.2 | 36,827 | 22,832 | 41.5 | 62,393 | 38,684 | 27.2 |
| Manitoulin | 1,077 | 668 | 0.7 | 1,156 | 716 | 1.3 | 2,233 | 1,384 | 1.0 |
| Nipissing | 12,524 | 7,765 | 8.9 | 12,074 | 7,486 | 13.6 | 24,598 | 15,251 | 10.7 |
| Parry Sound | 5,621 | 3,485 | 4.0 | 1,063 | 659 | 1.2 | 6,684 | 4,144 | 2.9 |
| Sudbury District | 2,688 | 1,667 | 1.9 | 1,808 | 1,121 | 2.0 | 4,496 | 2,788 | 2.0 |
| Sudbury R.M. | 39,778 | 24,662 | 28.3 | 16,515 | 10,239 | 18.6 | 56,293 | 34,901 | 24.5 |
| Timiskaming | 6,958 | 4,314 | 4.9 | 7,991 | 4,954 | 9.0 | 14,949 | 9,268 | 6.5 |
| REGION TOTAL | 140,747 | 87,264 | 100.0 | 88,741 | 55,018 | 100.0 | 229,488 | 142,282 | 100.0 |

TABLE IV/4

Northeastern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .68 Year 1975

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 38,791 | 26,378 | 31.1 | 12,780 | 8,690 | 16.9 | 51,571 | 35,068 | 25.8 |
| Cochrane | 24,660 | 16,769 | 19.8 | 19,118 | 13,000 | 25.3 | 43,778 | 29,769 | 21.9 |
| Manitoulin | 868 | 590 | 0.7 | 422 | 287 | 0.6 | 1,290 | 877 | 0.6 |
| Nipissing | 17,544 | 11,930 | 14.1 | 10,433 | 7,094 | 13.8 | 27,977 | 19,024 | 14.0 |
| Parry Sound | 5,944 | 4,042 | 4.8 | 1,771 | 1,204 | 2.3 | 7,715 | 5,246 | 3.9 |
| Sudbury District | 1,922 | 1,307 | 1.5 | 1,345 | 915 | 1.8 | 3,267 | 2,222 | 1.6 |
| Sudbury R.M. | 29,945 | 20,362 | 24.0 | 27,532 | 18,722 | 36.4 | 57,477 | 39,084 | 28.7 |
| Timiskaming | 4,966 | 3,377 | 4.0 | 2,215 | 1,506 | 2.9 | 7,181 | 4,883 | 3.5 |
| REGION TOTAL | 124,640 | 84,755 | 100.0 | 75,616 | 51,418 | 100.0 | 200,256 | 136,173 | 100.0 |

TABLE IV/4

Northeastern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .75 Year 1974

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 24,217 | 18,163 | 28.6 | 13,164 | 9,873 | 18.6 | 37,381 | 28,036 | 24.0 |
| Cochrane | 17,187 | 12,891 | 20.3 | 17,230 | 12,922 | 24.3 | 34,417 | 25,813 | 22.1 |
| Manitoulin | 420 | 315 | 0.5 | 147 | 111 | 0.2 | 567 | 426 | 0.4 |
| Nipissing | 14,074 | 10,556 | 16.6 | 12,207 | 9,155 | 17.3 | 26,281 | 19,711 | 16.9 |
| Parry Sound | 6,306 | 4,730 | 7.5 | 2,294 | 1,721 | 3.2 | 8,600 | 6,451 | 5.5 |
| Sudbury District | 2,408 | 1,806 | 2.8 | 2,089 | 1,567 | 3.0 | 4,497 | 3,373 | 2.9 |
| Sudbury R.M. | 15,447 | 11,585 | 18.2 | 16,814 | 12,611 | 23.8 | 32,261 | 24,196 | 20.8 |
| Timiskaming | 4,655 | 3,491 | 5.5 | 6,793 | 5,095 | 9.6 | 11,448 | 8,586 | 7.4 |
| REGION TOTAL | 84,714 | 63,537 | 100.0 | 70,738 | 53,055 | 100.0 | 155,452 | 116,592 | 100.0 |

TABLE IV/4

Northeastern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .87 Year 1973

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 22,467 | 19,546 | 27.2 | 27,348 | 23,793 | 35.7 | 49,815 | 43,339 | 31.3 |
| Cochrane | 16,007 | 13,927 | 19.4 | 7,910 | 6,881 | 10.3 | 23,917 | 20,808 | 15.0 |
| Manitoulin | 439 | 382 | 0.5 | 673 | 585 | 0.9 | 1,112 | 967 | 0.7 |
| Nipissing | 16,740 | 14,564 | 20.3 | 10,055 | 8,748 | 13.1 | 26,795 | 23,813 | 16.8 |
| Parry Sound | 3,725 | 3,241 | 4.5 | 1,967 | 1,711 | 2.6 | 5,962 | 4,952 | 3.6 |
| Sudbury District | 1,688 | 1,469 | 2.0 | 552 | 481 | 0.7 | 2,240 | 1,950 | 1.4 |
| Sudbury R.M. | 18,581 | 16,166 | 22.5 | 17,582 | 15,296 | 23.0 | 36,163 | 31,462 | 22.7 |
| Timiskaming | 3,002 | 2,612 | 3.6 | 10,458 | 9,098 | 13.7 | 13,460 | 11,710 | 8.5 |
| REGION TOTAL | 82,649 | 71,907 | 100.0 | 76,545 | 66,593 | 100.0 | 159,194 | 138,500 | 100.0 |

TABLE IV/4

Northeastern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .95 Year 1972

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 14,740 | 14,144 | 20.4 | 19,126 | 18,351 | 22.6 | 33,866 | 32,495 | 21.6 |
| Cochrane | 11,214 | 10,653 | 15.5 | 9,781 | 9,292 | 11.6 | 20,995 | 19,945 | 13.3 |
| Manitoulin | 181 | 172 | 0.3 | 49 | 47 | 0.1 | 230 | 219 | 0.1 |
| Nipissing | 10,815 | 10,274 | 15.0 | 9,092 | 8,637 | 10.8 | 19,907 | 18,911 | 12.7 |
| Parry Sound | 2,889 | 2,745 | 4.0 | 341 | 324 | 0.4 | 3,230 | 3,069 | 2.1 |
| Sudbury District | 1,358 | 1,290 | 1.9 | 1,897 | 1,802 | 2.2 | 3,255 | 3,092 | 2.1 |
| Sudbury R.M. | 28,254 | 26,842 | 39.2 | 39,552 | 37,574 | 46.7 | 67,806 | 64,416 | 43.3 |
| Timiskaming | 2,686 | 2,552 | 3.7 | 4,775 | 4,536 | 5.6 | 7,461 | 7,088 | 4.8 |
| REGION TOTAL | 72,137 | 68,672 | 100.0 | 84,613 | 80,563 | 100.0 | 156,750 | 149,235 | 100.0 |

TABLE IV/4

Northeastern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator 100.0 Year 1971

| Municipality | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Algoma | 13,422 | 13,422 | 14.9 | 7,574 | 7,574 | 13.8 | 20,996 | 20,996 | 14.5 |
| Cochrane | 8,072 | 8,072 | 9.0 | 3,057 | 3,057 | 6.4 | 11,579 | 11,579 | 8.0 |
| Manitoulin | 246 | 246 | 0.3 | 92 | 92 | 0.2 | 338 | 388 | 0.3 |
| Nipissing | 9,798 | 9,798 | 10.9 | 8,002 | 8,002 | 14.6 | 17,800 | 17,800 | 12.3 |
| Parry Sound | 2,635 | 2,635 | 2.9 | 353 | 353 | 0.6 | 2,988 | 2,988 | 2.1 |
| Sudbury District | 1,796 | 1,796 | 2.0 | 1,290 | 1,290 | 2.4 | 3,086 | 3,086 | 2.1 |
| Sudbury R.M. | 51,076 | 51,076 | 56.9 | 31,093 | 31,093 | 56.7 | 82,169 | 82,169 | 56.8 |
| Timiskaming | 2,775 | 2,775 | 3.1 | 2,882 | 2,882 | 5.3 | 5,657 | 5,657 | 3.9 |
| REGION TOTAL | 89,820 | 89,820 | 100.0 | 54,793 | 54,793 | 100.0 | 144,613 | 144,613 | 100.0 |

TABLE IV/5

TOTAL PRODUCTION OF MINERAL AGGREGATE, NORTHEASTERN ONTARIO ECONOMIC REGION, 1976-1977-1978

| Territorial District | 1976 | 1977 | 1978 |
|---|---|---|---|
| | | (Tonnes) | |
| Cochrane | 821,613 | 1,781,403 | 2,974,750 |
| Timiskaming | 627,039 | 583,549 | 1,034,545 |
| Nipissing | 1,342,875 | 906,729 | 946,626 |
| Manitoulin | 366,445 | 267,996 | 281,183 |
| Algoma | 741,629 | 1,897,794 | 2,630,582 |
| Parry Sound | 565,954 | 638,932 | 968,244 |
| Sudbury | 4,768,955 | 6,236,400 | 4,030,316 |
| TOTAL | 9,234,510 | 12,312,803 | 12,866,246 |

# APPENDIX V
# NORTHWESTERN ONTARIO ECONOMIC REGION

TABLE V/1

POPULATION OF THE NORTHWESTERN ONTARIO ECONOMIC REGION, 1971-1979

| Territorial District | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|
| Kenora | 49,750 | 52,900 | 52,500 | 52,400 | 52,100 | 58,700 | 58,900 | 59,400 | 60,790 |
| Rainy River | 25,600 | 25,600 | 25,600 | 25,600 | 25,600 | 25,200 | 24,600 | 24,570 | 24,570 |
| Thunder Bay | 142,000 | 145,200 | 145,000 | 145,400 | 145,400 | 152,700 | 151,600 | 153,000 | 154,600 |
| TOTAL | 217,350 | 223,700 | 223,100 | 223,400 | 223,100 | 236,600 | 235,100 | 237,100 | 239,960 |

Source: The Financial Post — Survey of Markets 1972-1978



TABLE V/2

NORTHWESTERN ONTARIO ECONOMIC REGION — RETAIL SALES, 1971-1979
(1971 Constant Dollars in Thousands)

| Territorial District | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|
| Kenora | 73,400 | 76,215 | 76,077 | 70,634 | 69,829 | 79,177 | 92,487 | 106,041 | 119,472 |
| Rainy River | 37,400 | 38,942 | 38,962 | 36,321 | 36,041 | 40,898 | 35,818 | 37,512 | 36,107 |
| Thunder Bay | 209,800 | 219,066 | 219,701 | 205,178 | 204,027 | 231,359 | 240,245 | 232,794 | 226,383 |
| TOTAL | 320,600 | 334,223 | 334,740 | 312,133 | 309,897 | 351,434 | 368,550 | 376,347 | 381,962 |

Source: The Financial Post — Survey of Markets 1972-1978

TABLE V/3

NORTHWESTERN ONTARIO ECONOMIC REGION — DISPOSABLE INCOME, 1971-1979

(1971 Constant Dollars in Thousands)

| Territorial District | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|---|---|---|---|---|---|---|---|---|---|
| Kenora | 162,400 | 167,731 | 166,667 | 166,306 | 167,713 | 188,653 | 197,496 | 204,926 | 203,779 |
| Rainy River | 79,600 | 84,366 | 85,664 | 86,244 | 86,485 | 81,110 | 81,596 | 83,388 | 80,286 |
| Thunder Bay | 460,400 | 478,027 | 477,133 | 479,985 | 487,850 | 535,536 | 553,698 | 576,842 | 571,939 |
| TOTAL | 702,400 | 730,124 | 729,464 | 732,535 | 742,048 | 805,299 | 832,790 | 865,156 | 856,004 |

Source: The Financial Post — Survey of Markets 1972-1978



TABLE V/4

RETAIL SALES/CAPITA IN NORTHWESTERN ONTARIO ECONOMIC REGION, 1971-1981

(In 1971 Constant Dollars)

| Territorial District | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Kenora | 1,475 | 1,441 | 1,449 | 1,348 | 1,340 | 1,349 | 1,570 | 1,785 | 1,965 | 1,794 | 1,848 |
| Rainy River | 1,461 | 1,521 | 1,522 | 1,419 | 1,408 | 1,623 | 1,456 | 1,519 | 1,470 | 1,497 | 1,499 |
| Thunder Bay | 1,477 | 1,509 | 1,515 | 1,411 | 1,403 | 1,515 | 1,585 | 1,522 | 1,464 | 1,508 | 1,512 |
| AVERAGE TOTAL | 1,471 | 1,490 | 1,495 | 1,393 | 1,384 | 1,496 | 1,537 | 1,609 | 1,633 | 1,600 | 1,620 |
| ONTARIO AVERAGE TOTAL | 1,542 | 1,514 | 1,618 | 1,506 | 1,497 | 1,620 | 1,575 | 1,580 | 1,587 | 1,594 | 1,601 |
| Market Rating Index (%) | 95.4 | 98.4 | 92.4 | 92.5 | 92.5 | 92.3 | 97.6 | 101.8 | 102.9 | 100.8 | 101.2 |

TABLE V/5

DISPOSABLE INCOME/CAPITA IN NORTHWESTERN ONTARIO ECONOMIC REGION, 1971-1981

(In 1971 Constant Dollars)

| Territorial District | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Kenora | 3,264 | 3,171 | 3,175 | 3,174 | 3,219 | 3,214 | 3,353 | 3,450 | 3,352 | 3,396 | 3,422 |
| Rainy River | 3,109 | 3,296 | 3,346 | 3,369 | 3,378 | 3,219 | 3,317 | 3,376 | 3,268 | 3,353 | 3,364 |
| Thunder Bay | 3,242 | 3,292 | 3,291 | 3,301 | 3,355 | 3,507 | 3,652 | 3,770 | 3,699 | 3,806 | 3,876 |
| AVERAGE TOTAL | 3,205 | 3,253 | 3,271 | 3,281 | 3,317 | 3,313 | 3,441 | 3,532 | 3,440 | 3,518 | 3,554 |
| ONTARIO AVERAGE TOTAL | 3,135 | 3,289 | 3,314 | 3,369 | 3,419 | 3,668 | 3,757 | 3,811 | 3,909 | 4,006 | 4,104 |
| Income Rating Index (%) | 102.2 | 98.9 | 98.7 | 97.4 | 97.0 | 90.3 | 91.6 | 92.7 | 88.0 | 87.8 | 86.6 |



TABLE V/6 BUILDING PERMITS FOR NORTHWESTERN ONTARIO ECONOMIC REGION, 1981

(1971 Constant Dollars in Thousands)

| Counties | Residential Construction | % of Region | Non-Residential Construction | % of Region | Total Construction | % of Region |
|---|---|---|---|---|---|---|
| Kenora | 6,642 | 32.1 | 3,783 | 20.7 | 10,425 | 26.8 |
| Rainy River | 555 | 2.7 | 328 | 1.8 | 883 | 2.3 |
| Thunder Bay | 13,470 | 65.2 | 14,144 | 77.5 | 27,614 | 70.9 |
| TOTAL | 20,667 | 100.0 | 18,255 | 100.0 | 38,922 | 100.0 |

## TABLE V/6 BUILDING PERMITS FOR NORTHWESTERN ONTARIO ECONOMIC REGION, 1980

(1971 Constant Dollars in Thousands)

| Counties | Residential Construction | % of Region | Non-Residential Construction | % of Region | Total Construction | % of Region |
|---|---|---|---|---|---|---|
| Kenora | 5,897 | 24.3 | 3,975 | 19.7 | 9,872 | 22.2 |
| Rainy River | 712 | 2.9 | 666 | 3.3 | 1,378 | 3.1 |
| Thunder Bay | 17,663 | 72.8 | 15,529 | 77.0 | 33,192 | 74.7 |
| TOTAL | 24,272 | 100.0 | 20,170 | 100.0 | 44,442 | 100.0 |



TABLE V/6

Northwestern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .49 Year 1979

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 10,090 | 4,944 | 19.1 | 6,042 | 2,960 | 14.4 | 16,132 | 7,904 | 17.0 |
| Rainy River | 1,390 | 681 | 2.6 | 681 | 334 | 1.6 | 2,071 | 1,015 | 2.2 |
| Thunder Bay | 41,357 | 20,265 | 78.3 | 35,137 | 17,217 | 84.0 | 76,494 | 37,482 | 80.8 |
| REGION TOTAL | 52,837 | 25,890 | 100.0 | 41,860 | 20,511 | 100.0 | 94,697 | 46,401 | 100.0 |

TABLE V/6
Northwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .54 Year 1978

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 8,806 | 4,756 | 14.5 | 10,510 | 5,675 | 21.0 | 19,316 | 10,431 | 17.4 |
| Rainy River | 1,706 | 921 | 2.8 | 2,307 | 1,246 | 4.6 | 4,013 | 2,167 | 3.6 |
| Thunder Bay | 50,321 | 27,175 | 82.7 | 37,293 | 20,138 | 74.4 | 87,614 | 47,313 | 79.0 |
| REGION TOTAL | 60,833 | 32,852 | 100.0 | 50,110 | 27,059 | 100.0 | 110,943 | 59.911 | 100.0 |



TABLE V/6
Northwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .58 Year 1977

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 6,185 | 3,587 | 9.4 | 9.472 | 5,494 | 20.8 | 15,657 | 9,081 | 14.1 |
| Rainy River | 2,872 | 1,666 | 4.4 | 5,038 | 2,922 | 11.0 | 7,910 | 4,588 | 7.1 |
| Thunder Bay | 56,488 | 32,763 | 86.2 | 31,138 | 18,060 | 68.2 | 87,626 | 50,823 | 78.8 |
| REGION TOTAL | 65,545 | 38.016 | 100.0 | 45,648 | 26,476 | 100.0 | 111,193 | 64,492 | 100.0 |

TABLE V/6
Northwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .62 Year 1976

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 4,596 | 2,850 | 7.8 | 5,397 | 3,346 | 11.3 | 9,993 | 6,196 | 9.3 |
| Rainy River | 2,357 | 1,462 | 4.0 | 1,629 | 1,010 | 3.4 | 3,986 | 2,472 | 3.7 |
| Thunder Bay | 52,224 | 32,379 | 88.2 | 40,678 | 25,220 | 85.3 | 92,902 | 57,599 | 87.0 |
| REGION TOTAL | 59,177 | 36,691 | 100.0 | 47,704 | 29,576 | 100.0 | 106,881 | 66,267 | 100.0 |



TABLE V/6
Northwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .68 Year 1975

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 5,174 | 3,518 | 11.6 | 8,199 | 5,575 | 24.5 | 13,373 | 9,093 | 17.2 |
| Rainy River | 1,763 | 1,199 | 4.0 | 3,814 | 2,594 | 11.4 | 5,577 | 3,793 | 7.2 |
| Thunder Bay | 37,488 | 25,492 | 84.4 | 21,422 | 14,568 | 64.1 | 58,910 | 40,060 | 75.6 |
| REGION TOTAL | 44,425 | 30,209 | 100.0 | 33,435 | 22,737 | 100.0 | 77,860 | 52,946 | 100.0 |

TABLE V/6
Northwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .75 Year 1974

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 6,020 | 4,518 | 16.2 | 6,567 | 4,926 | 15.6 | 12,587 | 9,444 | 15.9 |
| Rainy River | 1,861 | 1,395 | 5.0 | 5,274 | 3,956 | 12.6 | 7,135 | 5,351 | 9.0 |
| Thunder Bay | 29,254 | 21,941 | 78.8 | 30,175 | 22,632 | 71.8 | 59,429 | 44,573 | 75.1 |
| REGION TOTAL | 37,135 | 27,854 | 100.0 | 42,016 | 31,514 | 100.0 | 79,151 | 59,368 | 100.0 |



TABLE V/6
Northwestern Region

All dollar amounts are thousands of dollars
Implicit G.N.E. Deflator .87 Year 1973

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 3,822 | 3,325 | 11.5 | 6,004 | 5,223 | 14.3 | 9,826 | 8,548 | 13.0 |
| Rainy River | 2,285 | 1,988 | 6.9 | 1,943 | 1,691 | 4.6 | 4,228 | 3,679 | 5.6 |
| Thunder Bay | 27,246 | 23,704 | 81.6 | 34,073 | 29,644 | 81.1 | 61,319 | 53,348 | 81.4 |
| REGION TOTAL | 33,353 | 29,017 | 100.0 | 42,020 | 36,558 | 100.0 | 75,373 | 65,575 | 100.0 |

TABLE V/6

Northwestern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator .95 Year 1972

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 3,561 | 3,382 | 14.6 | 4,463 | 4,240 | 22.1 | 8,024 | 7,622 | 18.0 |
| Rainy River | 898 | 853 | 3.7 | 1,090 | 1,035 | 5.4 | 1,988 | 1,888 | 4.5 |
| Thunder Bay | 19,999 | 18,999 | 81.7 | 14,651 | 13,919 | 72.5 | 34,650 | 32,918 | 77.5 |
| REGION TOTAL | 24,458 | 23,234 | 100.0 | 20,204 | 19,194 | 100.0 | 44,662 | 42,428 | 100.0 |



TABLE V/6

Northwestern Region

All dollar amounts are thousands of dollars

Implicit G.N.E. Deflator 1.00 Year 1971

| Territorial District | Residential Construction | | | Non-Residential Construction | | | Total Construction | | |
|---|---|---|---|---|---|---|---|---|---|
| | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region | Actual $ | Constant $ | % of Region |
| Kenora | 2,238 | 2,238 | 11.9 | 4,067 | 4,067 | 15.7 | 6,305 | 6,305 | 14.1 |
| Rainy River | 1,168 | 1,168 | 6.2 | 885 | 885 | 3.4 | 2,053 | 2,053 | 4.6 |
| Thunder Bay | 15,348 | 15,348 | 81.9 | 21,010 | 21,010 | 80.9 | 36,358 | 36,358 | 81.3 |
| REGION TOTAL | 18,754 | 18,754 | 100.0 | 25,962 | 26,962 | 100.0 | 44,716 | 44,716 | 100.0 |

TABLE V/7

TOTAL PRODUCTION OF MINERAL AGGREGATE, NORTHWESTERN ONTARIO ECONOMIC REGION, 1976-1978

| County | 1976 | 1977 | 1978 |
|---|---|---|---|
| | | (Tonnes) | |
| Kenora | 631,565 | 790,830 | 711,198 |
| Thunder Bay | 2,518,178 | 3,025,133 | 2,771,655 |
| Rainy River | 285,763 | 247,361 | 266,562 |
| TOTAL | 3,435,506 | 4,065,324 | 3,749,415 |

**Bibliography**

Mineral Aggregate Transportation Study, December 1980 by Peat Marwick & Partners M.M. and Dillon Limited.

A Policy for Mineral Aggregate Resource Management in Ontario, Report of the Ontario Mineral Aggregate Working Party, December 1976.

Mineral Aggregate Study, Central Ontario's Planning Region, 1974. Prepared by Proctor and Redfern Ltd., Consulting Engineers and Planners.

Mineral Aggregate Study and Geological Inventory of Parts of the Eastern Ontario Region, 1975. Prepared by Proctor and Redfern Ltd., Consulting Engineers and Planners.

Mineral Aggregate Study and Geological Inventory, Southwestern Region of Ontario, 1977. Prepared by Proctor and Redfern Limited and Gartner Lee Associates Limited.

Sudbury Area Mineral Aggregate Study, 1978. Prepared by Proctor and Redfern Limited.

Mineral Aggregate Study for the Thunder Bay Area, 1978. Prepared by James F. MacLaren Ltd. and Associates.

S & MM — Sales Marketing Management, July 24, 1978, The Survey of Buying Power.

Financial Post, Survey of Markets, 1971-1978.

Construction in Canada, Annual, Statistics Canada, Catalog No. 64-201.

Ontario Statistics 1976 to 1980, Ministry of Treasury Economics and Intergovernmental Affairs.

Market Research Handbook 1976 to 1979, Statistics Canada, Catalog No. 63-224 Annual.

The Economics of Mineral Aggregate Production and Consumption in Newfoundland and Labrador 1981, by Philip D. Carter B.A., M.A.

Minnesota Aggregate Resource Study, 1980 by Ernest K. Lehman & Associates Inc.

Statistical Report on the Mineral Industry of Ontario 1971-1973 and 1974, Ontario Ministry of Natural Resources, by E.E. Matten.

Long-Range Forecasting and Planning, paper by Andre Markel presented during annual conference of the Australian Division of the Institute of Quarrying held in Perth, October 1979.

The Aggregates Industry in the 1980s, Keynote Address at the 50th Anniversary Conference of the Sand and Gravel Association, 19-20 May 1980 in Torquay, England by Gerald Mertimer, CBE, F Eng.

Mineral Facts and Problems, Bureau of Mines, Bulletin No. 650, Edition 1965, 1970 and 1975, United States Department of the Interior.

Building Permits in Ontario by Counties, Special compilation 1971-1979 by Central Statistical Services, Ministry of Treasury and Economics.

Population Projection by Planning Regions and Counties, Ontario. Selected years 1976-2001, Ontario Statistics 1980. Ministry of Treasury and Economics.

**Industrial Mineral Background Papers**

1. Peat, Marwick and Partners and M.M. Dillon
   1980: Mineral Aggregate Transportation Study: Final Report; Ontario Ministry of Natural Resources, Mineral Resources Branch, Industrial Mineral Background Paper 1 (IMBP 1), 133 pp.
2. Minnes, D.G.
   1982: Ontario Industrial Minerals; Ontario Ministry of Natural Resources, Mineral Resources Branch, Industrial Mineral Background Paper 2 (IMBP 2), 55 pp.

3. Mackintosh, E.E. and E.J. Mozuraitus
1982: Agriculture and the Aggregate Industry: Rehabilitation of Extracted Sand and Gravel Lands to an Agricultural After-Use; Ontario Ministry of Natural Resources, Mineral Resources Branch, Industrial Mineral Background Paper 3 (IMBP 3), 44 pp.

4. Matten, E.E.
1982: A Simplified Procedure for Forecasting Demand for Mineral Aggregate in Ontario; Ontario Ministry of Natural Resources, Mineral Resources Branch, Industrial Mineral Background Paper 4 (IMBP 4), 160 pp.

Publications of the Ontario Ministry of Natural Resources, Mineral Resources Group and price list may be obtained from:

Public Service Centre
Ministry of Natural Resources
Room 1640, Whitney Block
Toronto, Ontario
M7A 1W3

and

The Ontario Government Bookstore
880 Bay Street
Toronto, Ontario
M7A 1N8

Orders for publications should be accompanied by cheque or money order, payable to the Treasurer of Ontario.